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SHARP 20F640 SERVICE MANUAL

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Service Mode

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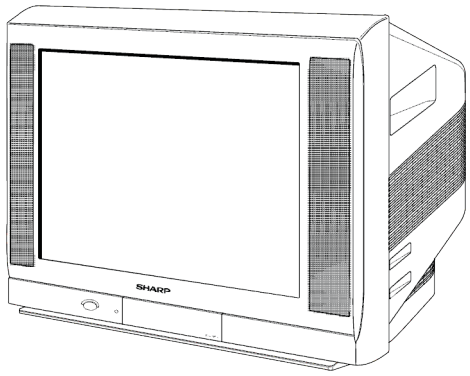
SHARP SERVICE MANUAL



COLOR TELEVISION

Chassis No. GA-2

MODELS 20F640

In the interests of user-safety (Required by safety regulations in some countries) the set should be restored to its original condition and only parts identical to those specified should be used.

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ELECTRICAL SPECIFICATIONS

POWER INPUT ..... AC 120 V, 60 Hz
POWER RATING 90W
PICTURE SIZE ..... 1,239 cm^2 (192sq inch)
CONVERGENCE ..... Magnetic
SWEEP DEFLECTION ..... Magnetic
FOCUS ..... Uni-Bi
INTERMEDIATE FREQUENCIES
- Picture IF Carrier Frequency ..... 45.75 MHz
- Sound IF Carrier Frequency ..... 41.25 MHz
- Color Sub-Carrier Frequency ..... 42.17 MHz (Nominal)

AUDIO POWER
- OUTPUT RATING ..... 2.5 W(RMS) x 2pcs

SPEAKER
- SIZE ..... 5 x 12 cm, 2pcs
- VOICE COIL IMPEDANCE ..... 16 ohm at 400 Hz

ANTENNA INPUT IMPEDANCE
- VHF/UHF ..... 75 ohm Unbalanced

TUNING RANGES
- VHF-Channels ..... 2 thru 13
- UHF-Channels ..... 14 thru 69
- CATV Channels ..... 1 thru 125 (EIA, Channel Plan U.S.A.)

Specifications are subject to change without prior notice.

SHARP CORPORATION

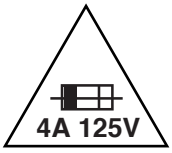
This document has been published to be used for after sales service only.
The contents are subject to change without notice.

IMPORTANT SERVICE SAFETY PRECAUTION

■ **Service work should be performed only by qualified service technicians who are thoroughly familiar with all safety checks and the servicing guidelines which follow:**

WARNING

1. For continued safety, no modification of any circuit should be attempted.
2. Disconnect AC power before servicing.
3. Semiconductor heat sinks are potential shock hazards when the chassis is operating.
4. The chassis in this receiver has two ground systems which are separated by insulating material. The non-isolated (hot) ground system is for the B+ voltage regulator circuit and the horizontal output circuit. The isolated ground system is for the low B+ DC voltages and the secondary circuit of the high voltage transformer.
   To prevent electrical shock use an isolation transformer between the line cord and power receptacle, when servicing this chassis.



CAUTION: FOR CONTINUED PROTECTION AGAINST A RISK OF FIRE, REPLACE ONLY WITH SAME TYPE 4A-125V FUSE.

SERVICING OF HIGH VOLTAGE SYSTEM AND PICTURE TUBE

When servicing the high voltage system, remove the static charge by connecting a 10k ohm resistor in series with an insulated wire (such as a test probe) between the picture tube ground and the anode lead. (AC line cord should be disconnected from AC outlet.)

1. Picture tube in this receiver employs integral implosion protection.
2. Replace with tube of the same type number for continued safety.
3. Do not lift picture tube by the neck.
4. Handle the picture tube only when wearing shatterproof goggles and after discharging the high voltage anode completely.

X-RADIATION AND HIGH VOLTAGE LIMITS

1. Be sure all service personnel are aware of the procedures and instructions covering X-radiation. The only potential source of X-ray in current solid state TV receivers is the picture tube. However, the picture tube does not emit measurable X-Ray radiation, if the high voltage is as specified in the "High Voltage Check" instructions.
   It is only when high voltage is excessive that X-radiation is capable of penetrating the shell of the picture tube including the lead in the glass material. The important precaution is to keep the high voltage below the maximum level specified.
2. It is essential that servicemen have available at all times an accurate high voltage meter.
   The calibration of this meter should be checked periodically.
3. High voltage should always be kept at the rated value –no higher. Operation at higher voltages may cause a failure of the picture tube or high voltage circuitry and;also, under certain conditions, may produce radiation in exceeding of desirable levels.
4. When the high voltage regulator is operating properly there is no possibility of an X-radiation problem. Every time a color chassis is serviced, the brightness should be tested while monitoring the high voltage with a meter to be certain that the high voltage does not exceed the specified value and that it is regulating correctly.
5. Do not use a picture tube other than that specified or make unrecommended circuit modifications to the high voltage circuitry.
6. When trouble shooting and taking test measurements on a receiver with excessive high voltage, avoid being unnecessarily close to the receiver.
   Do not operate the receiver longer than is necessary to locate the cause of excessive voltage.

IMPORTANT SERVICE SAFETY PRECAUTION

(Continued)

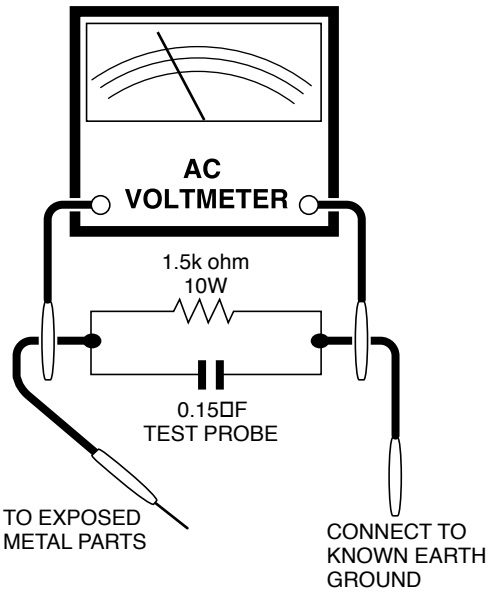
BEFORE RETURNING THE RECEIVER

(Fire & Shock Hazard)

Before returning the receiver to the user, perform the following safety checks.

1. Inspect all lead dress to make certain that leads are not pinched or that hardware is not lodged between the chassis and other metal parts in the receiver.
2. Inspect all protective devices such as non-metallic control knobs, insulating materials, cabinet backs, adjustment and compartment covers or shields, isolation resistor-capacity networks, mechanical insulators, etc.
3. To be sure that no shock hazard exists, check for leakage current in the following manner.

- Plug the AC cord directly into a 120 volt AC outlet, (Do not use an isolation transformer for this test).
- Using two clip leads, connect a 1.5k ohm, 10 watt resistor paralleled by a 0.15μF capacitor in series with all exposed metal cabinet parts and a known earth ground, such as electrical conduit or electrical ground connected to earth ground.
- Use an AC voltmeter having with 5000 ohm per volt, or higher, sensitivity to measure the AC voltage drop across the resistor.
- Connect the resistor connection to all exposed metal parts having a return to the chassis (antenna, metal cabinet, screw heads, knobs and control shafts, escutcheon, etc.) and measure the AC voltage drop across the resistor.
  All checks must be repeated with the AC line cord plug connection reversed. (If necessary, a non-polarized adapter plug must be used only for the purpose of completing these check.)
  Any current measured must not exceed 0.5 milliamp. Any measurements not within the limits outlined above indicate of a potential shock hazard and corrective action must be taken before returning the instrument to the customer.



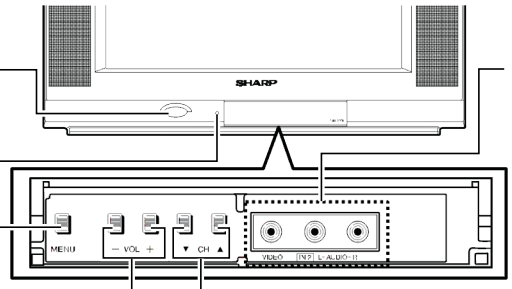
SAFETY NOTICE

Many electrical and mechanical parts in television receivers have special safety-related characteristics. These characteristics are often not evident from visual inspection, nor can protection afforded by them be necessarily increased by using replacement components rated for higher voltage, wattage, etc.
Replacement parts which have these special safety characteristics are identified in this manual; electrical components having such features are identified by "⚠" and shaded areas in the Replacement Parts Lists and Schematic Diagrams.

For continued protection, replacement parts must be identical to those used in the original circuit. The use of substitute replacement parts which do not have the same safety characteristics as the factory recommended replacement parts shown in this service manual, may create shock, fire, X-radiation or other hazards.

LOCATION OF USER'S CONTROL

Front Panel



POWER
Press → On.
Press again → Off.

SENSOR AREA FOR REMOTE CONTROL

MENU
Press → Accesses MAIN MENU.
Press again → Exits MAIN MENU.

VOLUME UP/DOWN
(+) Increases sound.
(–) Decreases sound.

VIDEO IN 2 L-AUDIO-R

(INSIDE DOOR)

CHANNEL UP/DOWN
(▲) Selects next higher channel.
(▼) Selects next lower channel.

Basic Remote Control Functions

POWER
Press → On.
Press again → Off.

REMOTE KEYPAD
Accesses any channel from keypad.

FLASHBACK
Returns to previous channel.

PERSONAL PREFERENCE
With the Personal Preference buttons, you can program your favorite programs by using the 4 categories A, B, C and D. The channels can be accessed quickly by using these buttons.

VOLUME UP/DOWN
(+) Increases sound.
(–) Decreases sound.
• In menu mode, changes or selects the TV adjustments.

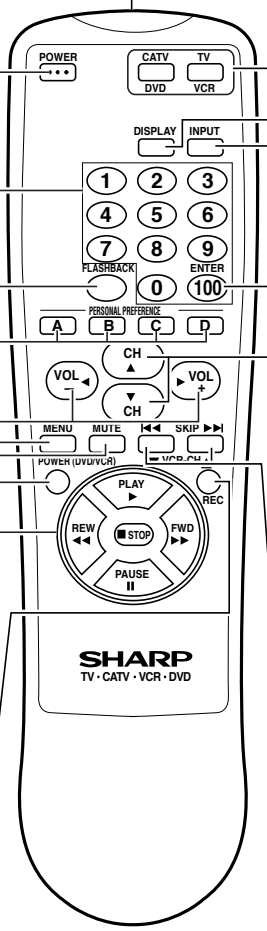
MENU
Press → Accesses MAIN MENU.
Press again → Exits MAIN MENU.

MUTE
Press → Mutes sound.
Press again → Restores sound.
• CLOSED CAPTION appears when sound is muted.

POWER (DVD/VCR)
Press → On.
Press again → Off.

DVD/VCR CONTROL

REC



Infrared Transmitter Window

CATV/DVD-TV/VCR MODE buttons
Press TV/VCR, sends power and channel select commands (Channel up/down and Random Access buttons) to the TV and VCR control.
Press CATV/DVD, sends power and channel select commands to a cable TV converter and DVD control.

DISPLAY
Press → Displays receiving channel for four seconds.
Press again → Removes display.
• Temporarily displays receiving channel when in Closed Caption mode.

INPUT
Press → Switch to external video INPUT 1 mode or COMPONENT mode.
Press 2 times → Switch to external video INPUT 2 mode.
Press 3 times → Switch back to the original TV mode.

ENTER
Used in some instances where a Cable Converter Box requires an "enter" command after selecting channels, when using the **REMOTE KEYPAD** button.

CHANNEL UP/DOWN
(▲) Selects next higher channel.
(▼) Selects next lower channel.
• Moves the " ● " mark of the MENU screens.

SKIP/VCR-CH

Note:
- The above shaded buttons on the Remote Control glow in the dark. To use the glow-in-the-dark display on the remote control, place it under a fluorescent light or other lighting.
- The phosphorescent material contains no radioactive or toxic material, so it is safe to use.
- The degree of illumination will vary depending on the strength of lighting used.
- The degree of illumination will decrease with time and depending on the temperature.
- The time needed to charge the phosphorescent display will vary depending on the surrounding lighting.
- Sunlight and fluorescent lighting are the most effective when charging the display.

INSTALLATION AND SERVICE INSTRUCTIONS

Note: (1) When performing any adjustments to resistor controls and transformers use non-metallic screwdrivers or TV alignment tools.
(2) Before performing adjustments, the TV set must be on at least 15 minutes.

CIRCUIT PROTECTION

The receiver is protected by a 4.0A fuse (F701), mounted on PWB-A, wired into one side of the AC line input.

X-RADIATION PROTECTOR CIRCUIT TEST

After service has been performed on the horizontal deflection system, high voltage system, B+ system, test the X-Radiation protection circuit to ascertain proper operation as follows:

1. Apply 120V AC using a variac transformer for accurate input voltage.
2. Allow for warm up and adjust all customer controls for normal picture and sound.
3. Receive a good local channel.
4. Connect a digital voltmeter to P603 Pin3 and make sure that the voltmeter reads 18.9 ±1.1V.
5. Apply external 24.5V DC at P603 Pin3 by using an external DC supply, TV must be shut off.
6. To reset the protector, unplug the AC cord at least 4 second before plugging in again. Now make sure that normal picture appears on the screen.
7. If the operation of the horizontal oscillator does not stop in step 5, the circuit must be repaired before the set is returned to the customer.

HIGH VOLTAGE CHECK

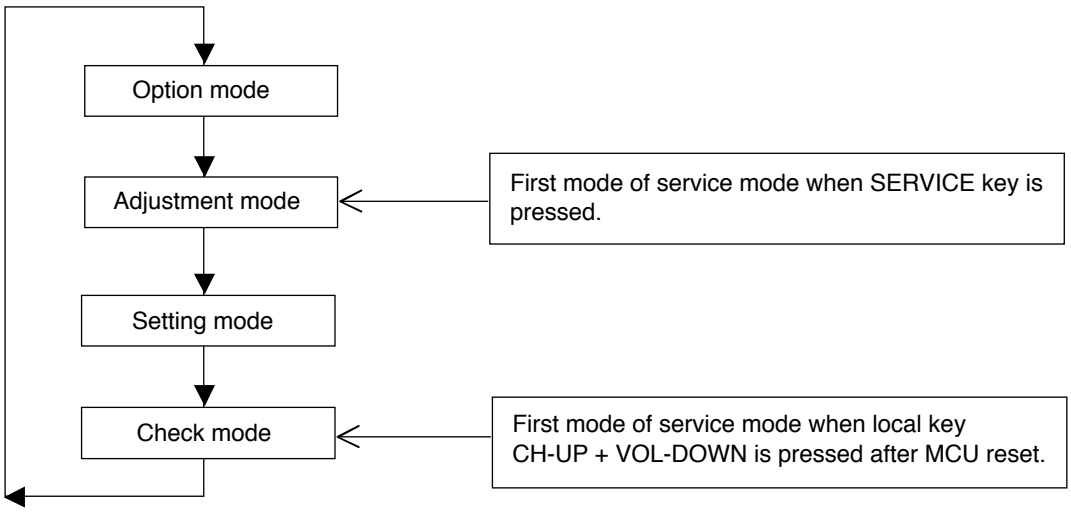
High voltage is not adjustable but must be checked to verify that the receiver is operating within safe and efficient design limitations as specified checks should be as follows:

1. Connect an accurate high voltage meter between ground and anode of picture tube.
2. Operate receiver for at least 15 minutes at 120V AC line voltage, with a strong air signal or a properly tuned in test signal.
3. Enter the service mode and set Y-mute ON by using Service R/C.
4. The voltage should be approximately 28.6kV (at zero beam).
   If a correct reading cannot be obtained, check circuitry for malfunctioning components. After the voltage test, make Y-mute off to the normal mode.

SERVICE MODE

Service Mode Overview

1. Service mode is entered by SERVICE key input or CH-UP +VOL-DOWN input during reset.
2. Service mode is cleared by entering SERVICE key or CH-UP +VOL-DOWN key command during service mode.
3. If key input port (SERVICE) input is LOW, then it is in service mode.
4. During key input port (SERVICE) input is LOW, clearing service mode by key input SERVICE or CH-UP + VOL-DOWN is disabled.
5. Service mode can be switched to 4 modes as follows by key input MENU;


Option mode
Adjustment mode
First mode of service mode when SERVICE key is pressed.
Setting mode
Check mode
First mode of service mode when local key CH-UP + VOL-DOWN is pressed after MCU reset.

6. AFT processing is disabled during service mode. PLL setting data is set to fo data.
7. All user data are set to default during service mode. FAO and SPEAKER user settings are off and on respectively in service mode. Energy Save is off.
8. Sleep timer, View timer and Off timer are inactivated in Service mode.
9. Sound is muting in service mode except at Adjustment Items V20, M01, M02, M03, M04, M05, and M06.

Adjustment Mode Items

ADJUSTMENT METHOD

Caution: to get into the service mode, one of the ways is press direct key for service items. the other ways is short the main chassis JA309 and JA402

There is three stage of Service Mode data
First stage data from V01 ~ M06
to go into second stage of service mode data, press MENU key
Second stage data from F01 ~ F51
to go into third stage of service mode data, press MENU key
Third stage data from 001 ~ 020

Below is the contents of these data

First Stage

No.	Item Name	IC	Register	Range	Default
V01	SUB-PICTURE	1 Chip	CONTRAST	0~127	127
V02	SUB-TINT	1 Chip	TINT	0~127	64
V03	SUB-COLOR	1 Chip	COLOR	0~127	64
V04	SUB-BRIGHT	1 Chip	BRIGHT	0~255	128
V05	SUB-SHARP	1 Chip	VIDEO-TONE	0~63	32
V06	V-SHIFT	1 Chip	V-SHIFT	0~7	4
V07	H-SHIFT	1 Chip	H-PHASE	0~31	16
V08	RF-AGC	1 Chip	RF-Delay	0~127	127
V09	V-SIZE	1 Chip	V-SIZE	0~63	32
V10	PIF-VCO	1 Chip	VIF-VCO	0~63	32
V11	R-CUTOFF	1 Chip	R-CUTOFF	0~255	127
V12	G-CUTOFF	1 Chip	G-CUTOFF	0~255	127
V13	B-CUTOFF	1 Chip	B-CUTOFF	0~255	127
V14	R-DRIVE	1 Chip	R-DRIVE	0~127	64
V15	B-DRIVE	1 Chip	B-DRIVE	0~127	64
V16	SUB-COLOR(YUV)	1 Chip	COLOR	0~127	64
V17	SUB-TINT(YUV)	1 Chip	BASEBAND-TINT	0~127	64
V18	CC-POS	Micron		0~255	32
V19	(Vertical mode)	1 Chip	V-MUTE,SERVICE	0, 1, 2	0
V20	SUB-VOL	1 Chip	A-ATT	0~127	127
V21	H-VCO	1 Chip	H-VCO	0~7	4
M01	MTS-ATT	MTS	ATT	0~15	10
M02	MTS-VCO	MTS	VCO	0~63	32
M03	MTS-FILTER	MTS	FILTER	0~63	28
M04	MTS-WIDEBAND	MTS	WIDEBAND	0~63	27
M05	MTS-SPECTRAL	MTS	SPECTRAL	0~63	32
M06	SUB-VOL	MTS	VOL	0~63	63

Auto Adjustment Item
1. H-VCO (Currently need manual adj)
2. RF-AGC
3. PIF-VCO
4. MTS-FILTER

■ SELF ADJUSTMENT

H-VCO

1. When there is H-VCO self-adjustment key input for adjustment item H-VCO, self-adjustment is performed.
2. H-FREE(1chip) is set to 1.
3. H-OUT is set by intelligent monitor output.
4. IM input is set as TIM input.
5. H-VCO(1chip) data is changed so that the number of input pulse is 125 inside 8ms interval.
6. When adjustment completed, OSD display and H-VCO self-adjustment status data of EEPROM are updated.
7. H-FREE(1chip), intelligent monitor output and IM input mode are recovered.

RF-AGC

1. When there is RF-AGC self-adjustment key input for adjustment item RF-AGC, self-adjustment is performed.
2. AGC-OUT is set by intelligent monitor output.
3. IM input is set as AD input.
4. By decreasing RF-AGC (1chip) data from current RF-AGC adjustment value to 0, AFT input voltage becomes the maximum setting value.
5. Increase RF-AGC(1chip) data, when AFT input voltage is at (max. 0.3V) point, adjustment is completed.
6. When adjustment completed, OSD display and RF-AGC self-adjustment status data of EEPROM are updated.
7. Intelligent monitor output and IM input mode are recovered.

PIF-VCO

1. When there is PIF-VCO self-adjustment key input for adjustment item PIF-VCO, self-adjustment is performed.
2. VIF-DEF(1chip) is set to 1.
3. AFC is set by intelligent monitor output.
4. IM input is set as AD input.
5. VIF-VCO(1chip) data is changed so that input voltage becomes 2.5V.
6. When adjustment completed, OSD display and PIF-VCO self-adjustment status data of EEPROM are updated.
7. VIF-DEF(1chip), intelligent monitor output and IM input mode are recovered.

MTS-FILTER

Adjustment is performed in the center of the range when FILTER status is OK.

1. If data is changed from 0 to 63, point where NG → OK is A and point where OK → NG is B.
2. If data is changed from 63 to 0, point where NG → OK is C and point where OK → NG is D.
3. (A+B+C+D)/4 is the adjustment point.

Setting Mode Items

Second Stage

No.	Item Name	IC	Register	Range	Default
F01	VideoTone-Gain (TV)	1chip	V-TONE	0 / 1	0
F02	VideoTone-Gain (AV)	1chip	V-TONE	0 / 1	0
F03	VideoTone-Gain(YUV)	1chip	V-TONE	0 / 1	0
F04	ABCL	1chip	ABCL	0 / 1	0
F05	BS	1chip	BS-OFF	0 / 1	0
F06	ABCL-G	1chip	ABCL-G	0 / 1	0
F07	SHP-AV	OFFSET	VIDEO-TONE(OFFSET)	-16~+16	0
F08	SHP-YUV	OFFSET	VIDEO-TONE(OFFSET)	-16~+16	0
F09	RGB-CLIP	1chip	ExtRGB-Clip	0 / 1	0
F10	E-SAVE	OFFSET	CONTRAST(OFFSET)	0~63	30
F11	FAO-VOL	1chip	A-ATT	0~127	120
F12	PIF-G	1chip	VIF-GAIN	0~7	4
F13	Y-DELAY(TV)	1chip	Y-Delay	0~7	0
F14	Y-DELAY(AV)	1chip	Y-Delay	0~7	0
F15	Y-DELAY(YUV)	1chip	Y-Delay	0~7	0
F16	TINT-AV	OFFSET	TINT(OFFSET)	-32~+32	0
F17	COL-AV	OFFSET	COLOR(OFFSET)	-32~+32	0
F18	R-DRI(R2)	OFFSET	R-DRI(OFFSET)	-32~+32	0
F19	R-DRI(R)	OFFSET	R-DRI(OFFSET)	-32~+32	0
F20	R-DRI(B)	OFFSET	R-DRI(OFFSET)	-32 ~+32	0
F21	B-DRI(R2)	OFFSET	B-DRI(OFFSET)	-32~+32	0
F22	B-DRI(R)	OFFSET	B-DRI(OFFSET)	-32~+32	0
F23	B-DRI(B)	OFFSET	B-DRI(OFFSET)	-32~+32	0
F24	V-FREE	1chip	V-FREE	0 / 1	0
F25	GAMMA	1chip	GAMMA	0~3	0
F26	TRAP(TV)	1chip	TRAP-FINE	0~3	2
F27	TRAP(AV)	1chip	TRAP-FINE	0~3	2
F28	H-FREE	1chip	H-FREE	0 / 1	0
F29	1W(TV)	1chip	V.Window	0 / 1	0
F30	1W(AV)	1chip	V.Window	0 / 1	0
F31	YLPF	1chip	YSW-LPF	0 / 1	1
F32	BS-D	1chip	BS-DISCHARGE	0~3	0
F33	BS-C	1chip	BS-CHARGE	0~3	0
F34	SL(TV)	1chip	S-SLICE DOWN	0~3	0
F35	SL(AV)	1chip	S-SLICE DOWN	0~3	0
F36	SL(YUV)	1chip	S-SLICE DOWN	0~3	0
F37	AFC2	1chip	AFC2-G	0 / 1	0
F38	VD(TV)	1chip	Vsync-Det	0 / 1	0
F39	VD(AV)	1chip	Vsync-Det	0 / 1	0
F40	AS(TV)	1chip	Auto-Slice	0 / 1	0
F41	AS(AV)	1chip	Auto-Slice	0 / 1	0
F42	AS(YUV)	1chip	Auto-Slice	0 / 1	0
F43	FBP(TV)	1chip	FBP Vth	0 / 1	0
F44	FBP(AV)	1chip	FBP Vth	0 / 1	0
F45	FBP(YUV)	1chip	FBP Vth	0 / 1	0
F46	C.Clip Level	1chip	C.Clip Level	0 / 1	0
F47	PSW	MTS	PSW	0 / 1	0
F48	FAO-VOL	MTS	VOL	0~63	60
F49	CP	PLL	CP	0 / 1	0
F50	CC LEVEL	MICRON			0
F51	OSD POS	MICRON			0
F52	OFFSET-ADJ-COL	1 chip	COLOR	-32~32	0
F53	OFFSET-ADJ-TINT	1 chip	TINT	-32~32	0
F54	OFFSET-ADJ-TINT-YUV	1 chip	BASEBAND-TINT	-32~32	0

Option Mode Items

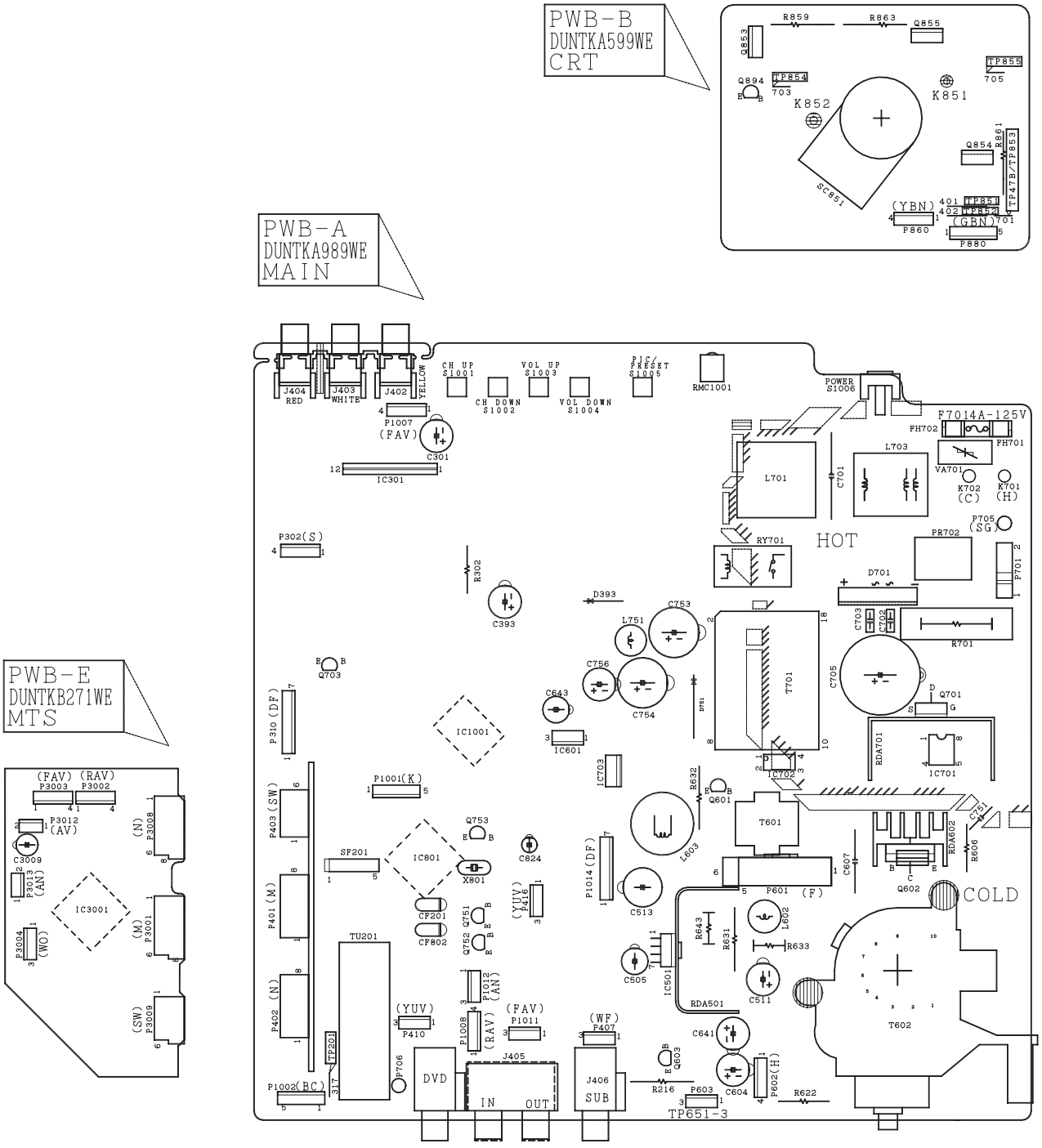
Third Stage

No	ITEM	0	1	DEFAULT
O01	DEM0	Without DEMO	With DEMO	1
O02	DOWNLOAD	Without V-CHIP OP	With V-CHIP OP	1
O03	V-CHIP	Without V-CHIP	With V-CHIP	1
O04	SPEAKER	Without SPEAKER	With SPEAKER	1
O05	FAO	Without FAO	With FAO	1
O06	P.PREF	Without P.PREF	With P.PREF	1
O07	UNIV+	Without UNIV+	With INIV+	1
O08	VIEW TIMER	Without VIEW TIMER	With VIEW TIMER	1
O09	EZ-SETUP	EZ-SETUP	AUTO PRESET	1
O10	PON-CH	Without POWER-ON	With POWER-ON	1
O11	FAV-COL	FAV-COL	COL-TEMP	1
O12	COMPONENT	Without COMPONENT	With COMPONENT	1
O13	AV	Without AV	With AV	1
O14	AV2	AV1 system	AV2 system	1
O15	MTS	Without MTS	With MTS	1
O16	TONE-CTRL	Without S-ADJ	With S-ADJ	1
O17	AUTO-OFF	Without AUTO-OFF	With AUTO-OFF	1
O18	INIT-LANG	ENGLISH	SPANISH	1
O19	SETUP-FLAG	NO SETUP	AUTO SETUP	1
O20	FR.AV (Front, Rear AV)	3: Display "FRONT A/V INPUTS" and "REAR A/V INPUTS" in DEMO mode. 2: Display "FRONT A/V INPUTS" only in DEMO mode. 1: Display "REAR A/V INPUTS" only in DEMO mode. 0: No display of above lines in DEMO mode.		3

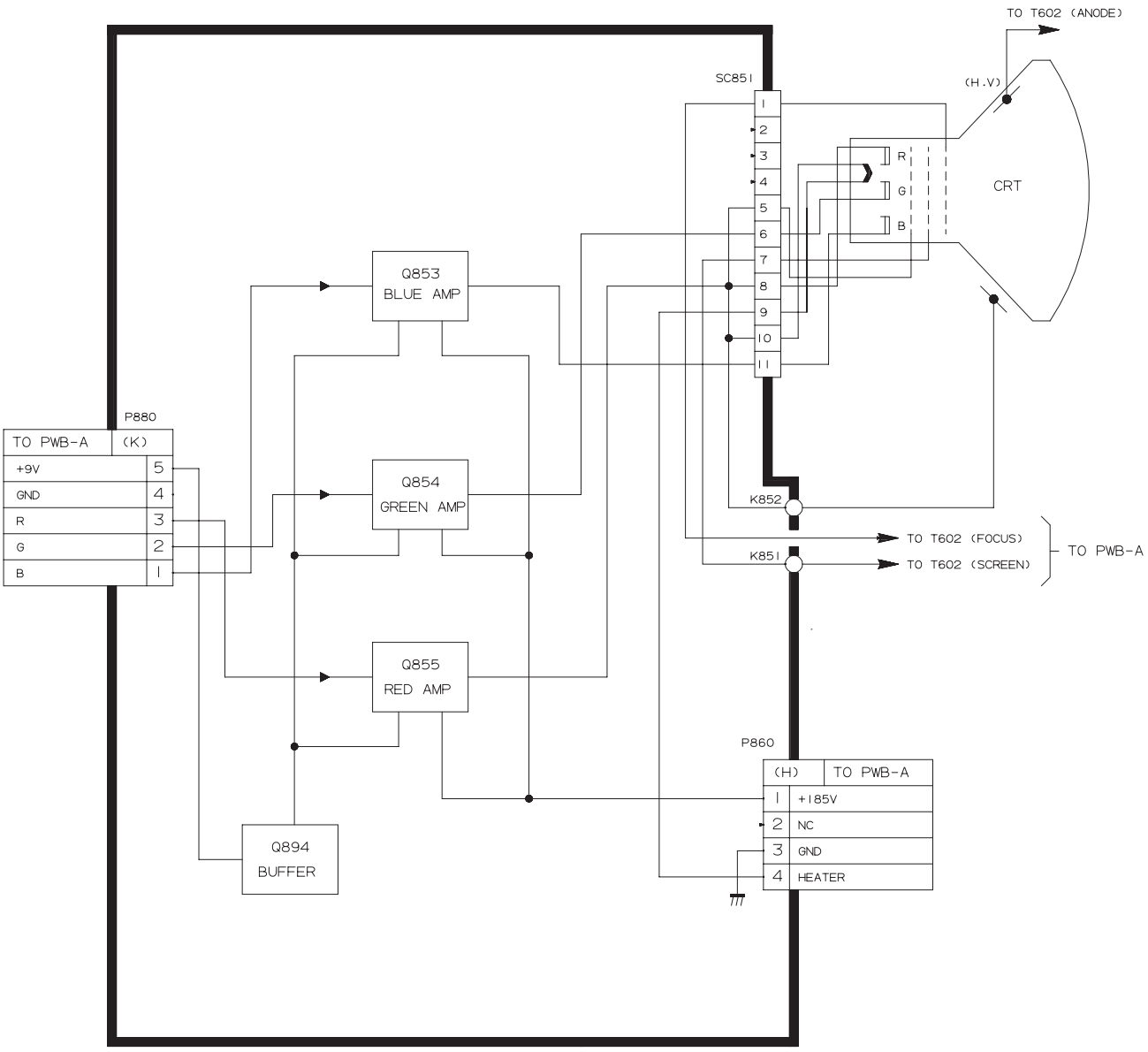
Check Mode

Micron mask version, software version and ROM correction function status are displayed in check mode.

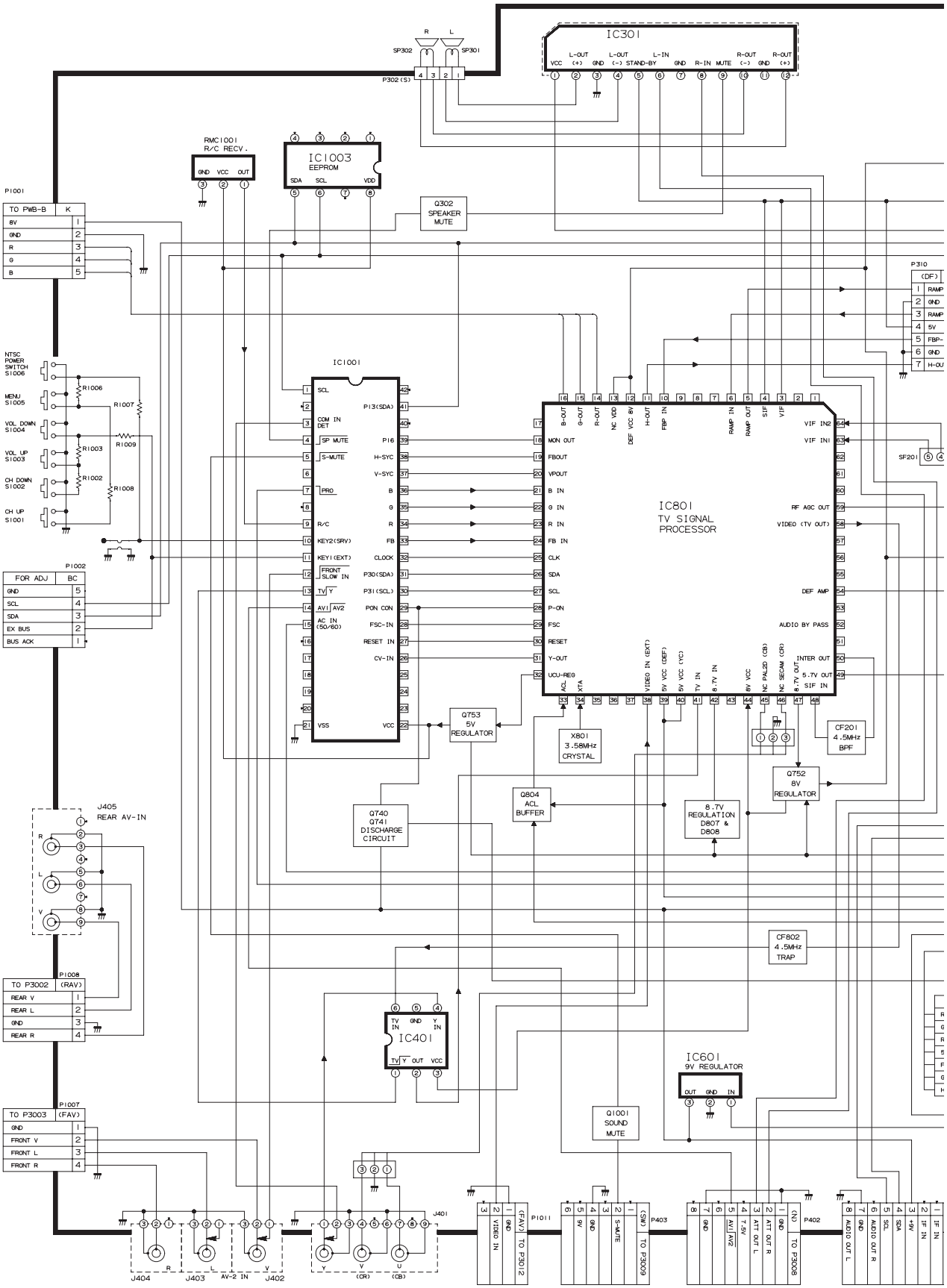
MODEL 20F640 CHASSIS LAYOUT

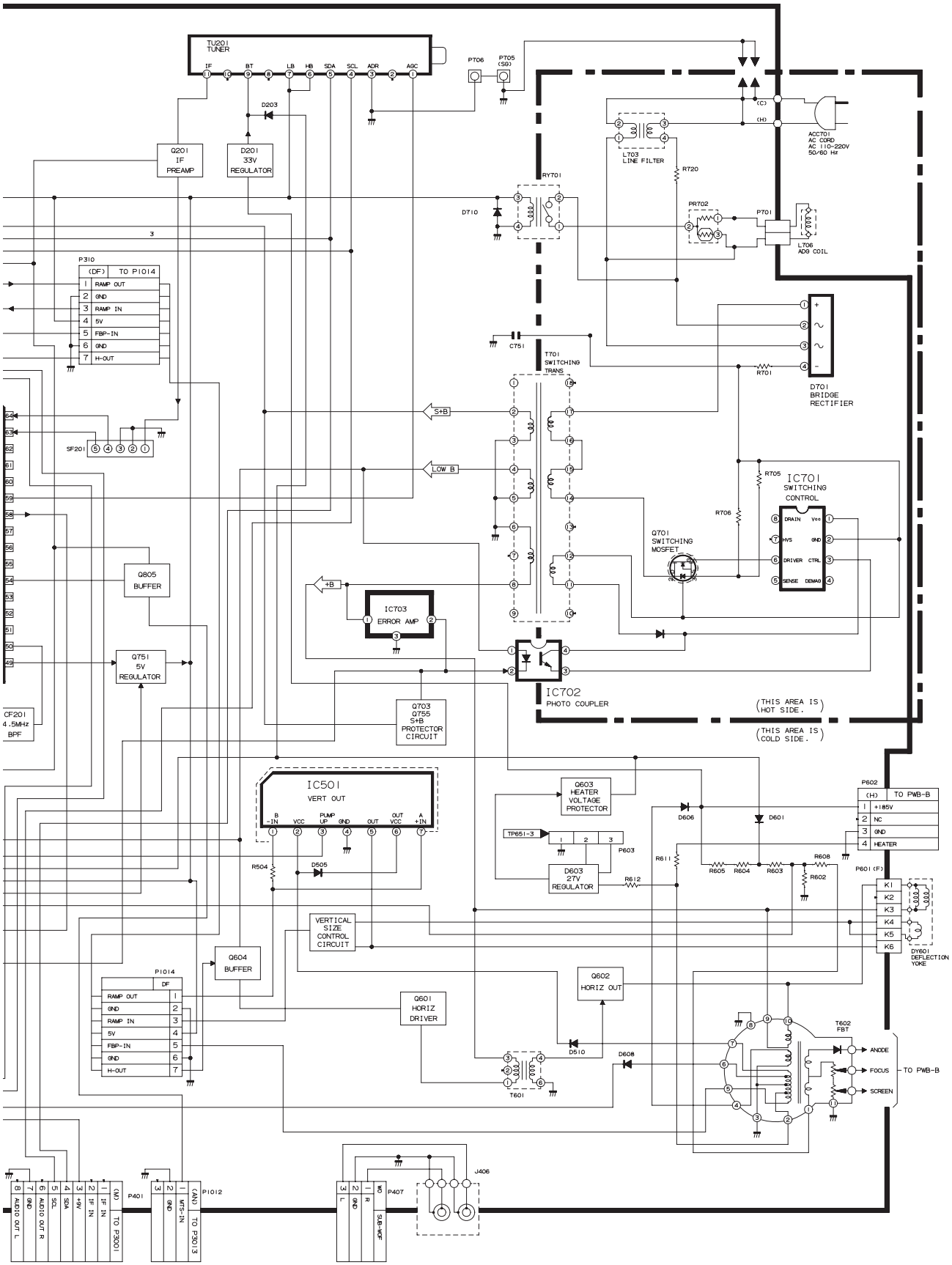


MODEL 20F640 BLOCK DIAGRAM: CRT Unit

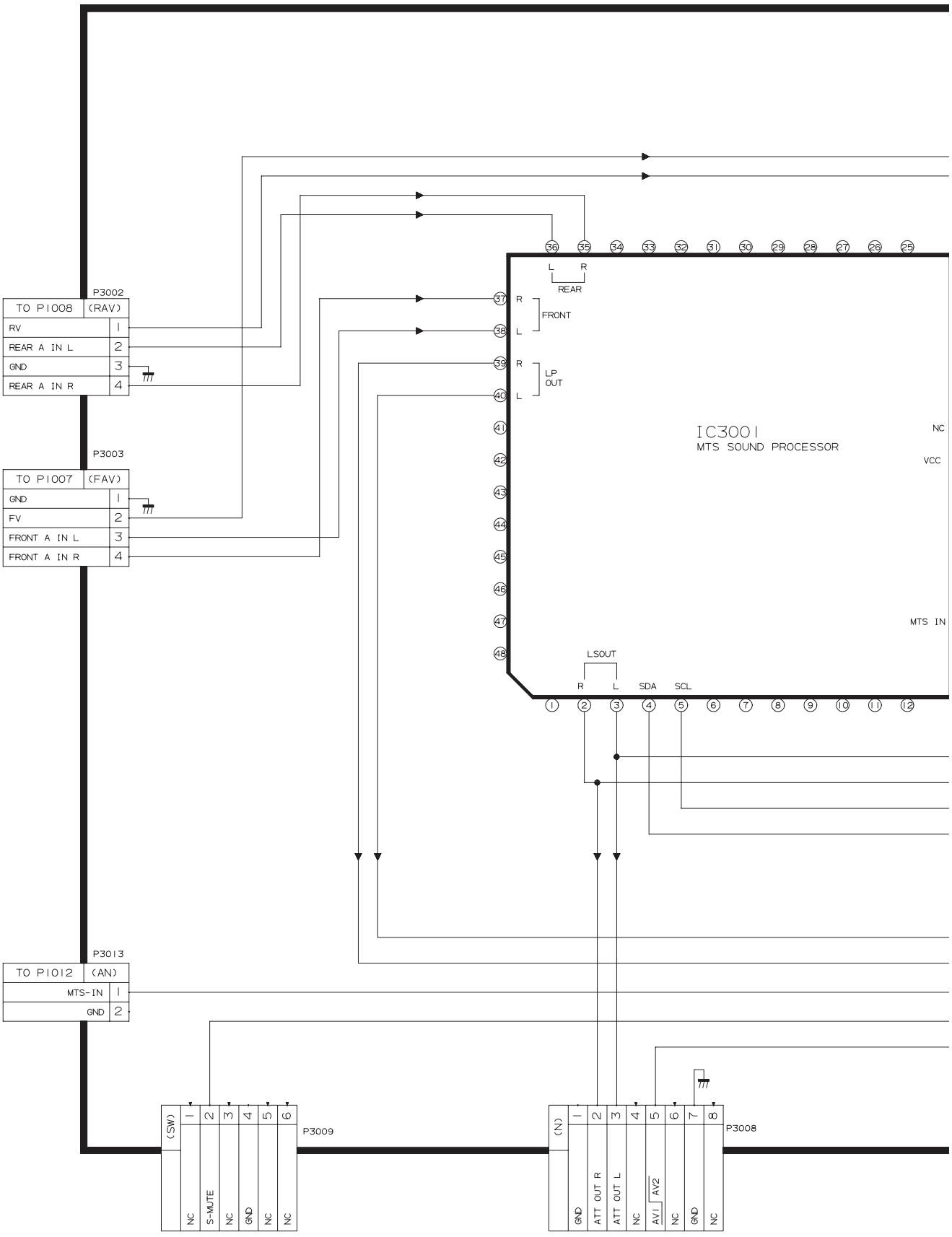


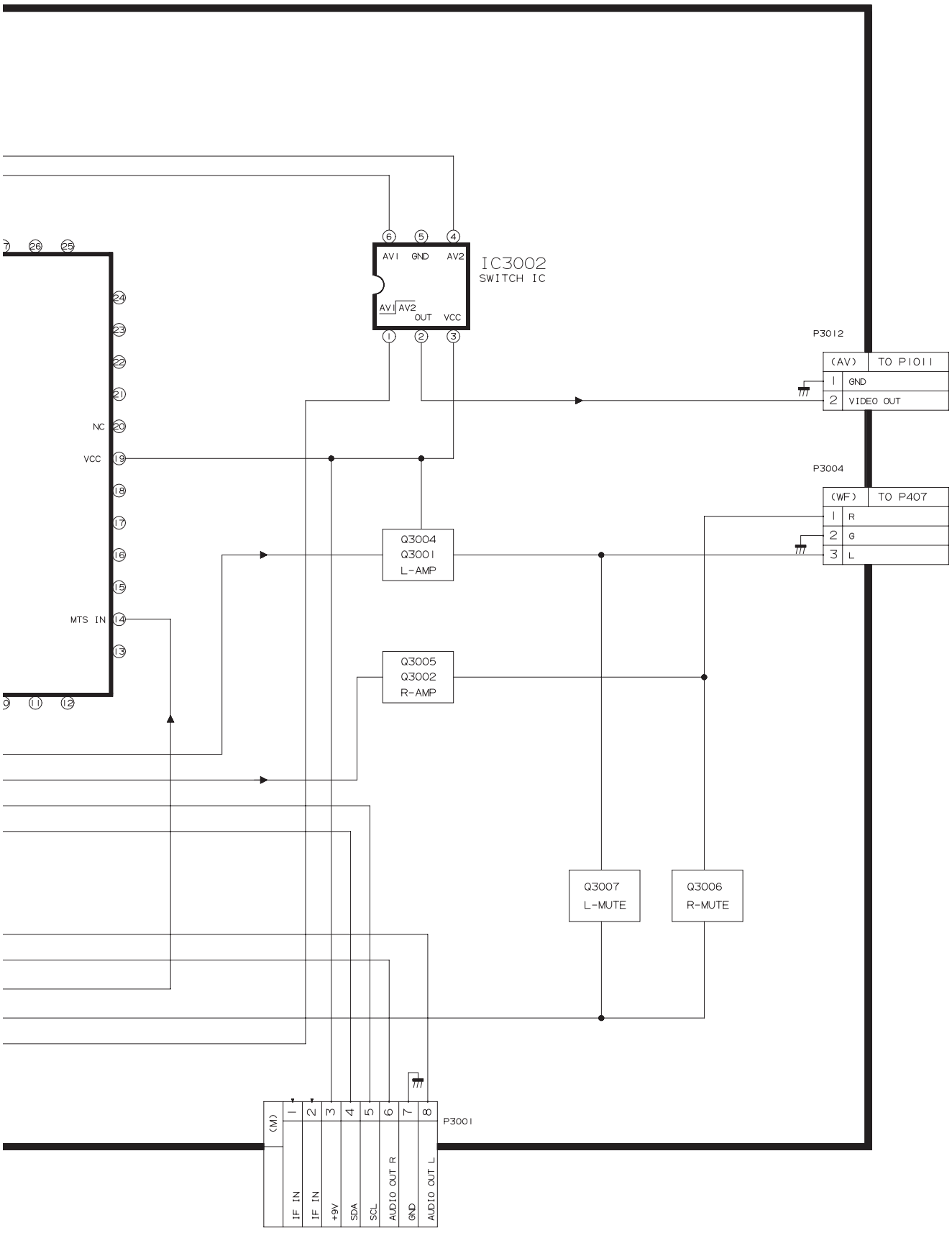
MODEL 20F640 BLOCK DIAGRAM: MAIN Unit




TU201 TUNER
IF BT LB HB SDA SCL ADR AGC
P706
PT05 (SG)
D203
Q201 IF PREAMP
D201 33V REGULATOR
L703 LINE FILTER
ACC701 AC CORD AC 110-220V 50/60 Hz
R720
RY701
D710
PR702
PT01
L706 ADJ COIL
P310
(DF) TO P1014
1 RAMP OUT
2 GND
3 RAMP IN
4 5V
5 FBP-IN
6 GND
7 H-OUT
C751
T701 SWITCHING TRANS
R701
D701 BRIDGE RECTIFIER
S+B
LOW B
SF201
R705
IC701 SWITCHING CONTROL
R706
DRAIN Vcc
N/S GND
DRIVER CTRL
SENSE DEMAG
Q701 SWITCHING MOSFET
Q805 BUFFER
+B
IC703 ERROR AMP
Q751 5V REGULATOR
IC702 PHOTO COUPLER
(THIS AREA IS HOT SIDE.)
(THIS AREA IS COLD SIDE.)
CF201 4.5MHz BPF
Q703 Q755 S+B PROTECTOR CIRCUIT
IC501 VERT OUT
B -IN VCC PUMP UP GND OUT OUT VCC A +IN
Q603 HEATER VOLTAGE PROTECTOR
TP651-3
P603
D603 27V REGULATOR
R612
D606
D601
P602
(H) TO PWB-B
1 +185V
2 NC
3 GND
4 HEATER
P601 (F)
R611
R605 R604 R603
R608
R602
R504
D505
K1 K2 K3 K4 K5 K6
DY601 DEFLECTION YOKE
VERTICAL SIZE CONTROL CIRCUIT
Q604 BUFFER
P1014
DF
RAMP OUT 1
GND 2
RAMP IN 3
5V 4
FBP-IN 5
GND 6
H-OUT 7
Q601 HORIZ DRIVER
Q602 HORIZ OUT
D510
D608
T601
T602 FBT
ANODE
FOCUS
SCREEN
TO PWB-B
P401
AUDIO OUT L
GND
AUDIO OUT R
SCL
SDA
+9V
IF IN
IF IN
(M) TO P3001
P1012
GND
MTS-IN
(AN) TO P3013
P407
J406
L
GND
R
MO
SUB-WOF

MODEL 20F640 BLOCK DIAGRAM: MTS MODULE Unit




IC3002
SWITCH IC
AV1 GND AV2
AV1 AV2
OUT VCC
NC
VCC
MTS IN
P3012
(AV) TO P1011
1 GND
2 VIDEO OUT
P3004
(WF) TO P407
1 R
2 G
3 L
Q3004
Q3001
L-AMP
Q3005
Q3002
R-AMP
Q3007
L-MUTE
Q3006
R-MUTE
P3001
(M)
1 IF IN
2 IF IN
3 +9V
4 SDA
5 SCL
6 AUDIO OUT R
7 GND
8 AUDIO OUT L

DESCRIPTION OF SCHEMATIC DIAGRAM

NOTES:

1. *The unit of resistance "ohm" is omitted. (K=kΩ=1000Ω, M=MΩ)*
2. *All resistors are 1/16 watt, unless otherwise noted.*
3. *All capacitors are μ F, unless otherwise noted. (P=pF=μμF)*
4. *(G) indicates ±2% tolerance may be used.*
5. ⏚ *indicates line isolated ground.*

VOLTAGE MEASUREMENT CONDITIONS:

1. *All DC voltages are measured with DVM connected between points indicated and chassis ground, line voltage set at 120V AC and all controls set for normal picture unless otherwise indicated.*
2. *All voltages measured with 1000μ V B & W or Color signal.*

WAVEFORM MEASUREMENT CONDITIONS:

1. *Photographs taken on a standard gated color bar signal, the tint setting adjusted for proper color. The wave shapes at the red, green and blue cathodes of the picture tube depend on the tint, color level and picture control.*
2. ⟳ *indicates waveform check points (See chart, waveforms are measured from point indicated to chassis ground.)*

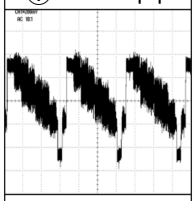
⚠ *AND SHADED ( ) COMPONENTS = SAFETY RELATED PARTS.*
▲ *MARK= X-RAY RELATED PARTS.*

DRGANNES MARQUES ⚠ ET HACHRES ( ): PIECES RELATIVES A LA SECURITE.
MARQUE ▲ : PIECS RELATIVE AUX RAYONS X.

This circuit diagram is a standard one, printed circuits may be subject to change for product improvement without prior notice.

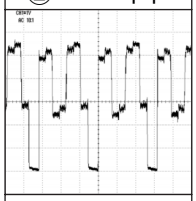
WAVEFORMS

① 1.024 Vp-p



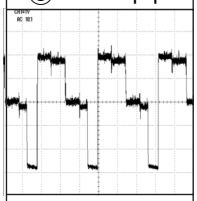
Horiz.Rate

② 5.69 Vp-p



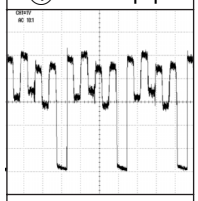
Horiz.Rate

③ 5.69 Vp-p



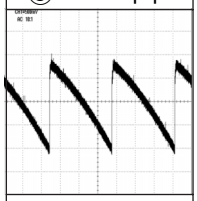
Horiz.Rate

④ 5.84 Vp-p



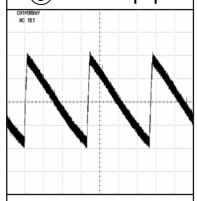
Horiz.Rate

⑤ 2.00 Vp-p



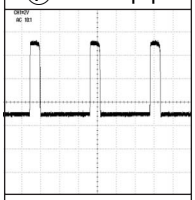
Vert.Rate

⑥ 2.08 Vp-p



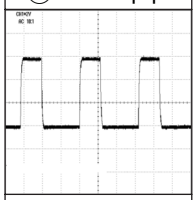
Vert.Rate

⑦ 6.56 Vp-p



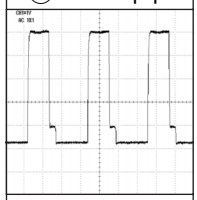
Horiz.Rate

⑧ 6.40 Vp-p



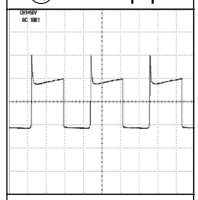
Horiz.Rate

⑨ 4.88 Vp-p



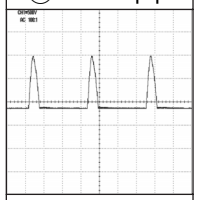
Horiz.Rate

⑩ 158 Vp-p



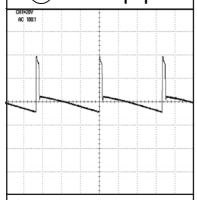
Horiz.Rate

⑪ 1140 Vp-p



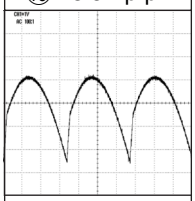
Horiz.Rate

⑫ 48 Vp-p



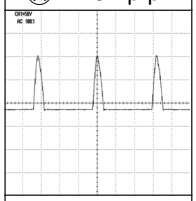
Vert.Rate

⑬ 3.8 Vp-p



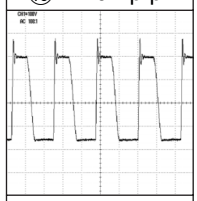
Vert.Rate

⑭ 118 Vp-p



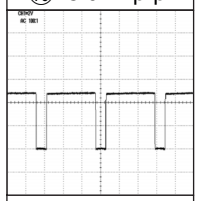
Horiz.Rate

⑮ 440 Vp-p



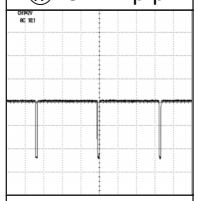
Horiz.Rate

⑯ 5.04 Vp-p



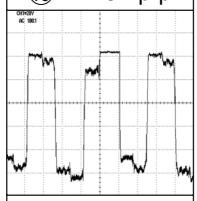
Horiz.Rate

⑰ 5.12 Vp-p



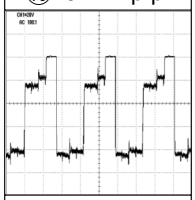
Vert.Rate

⑱ 112.8 Vp-p



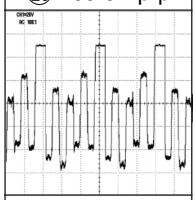
Horiz.Rate

⑲ 94.4 Vp-p



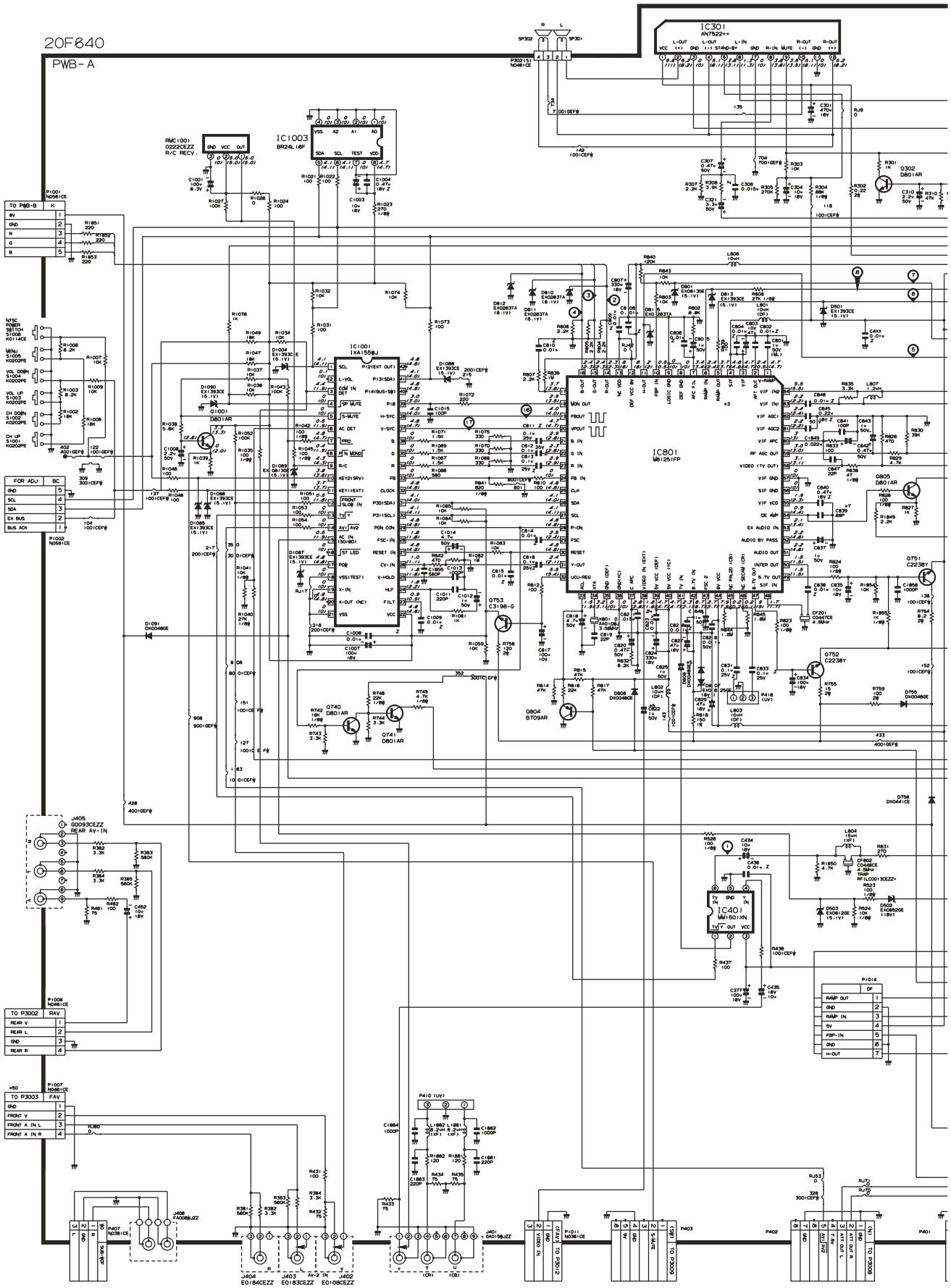
Horiz.Rate

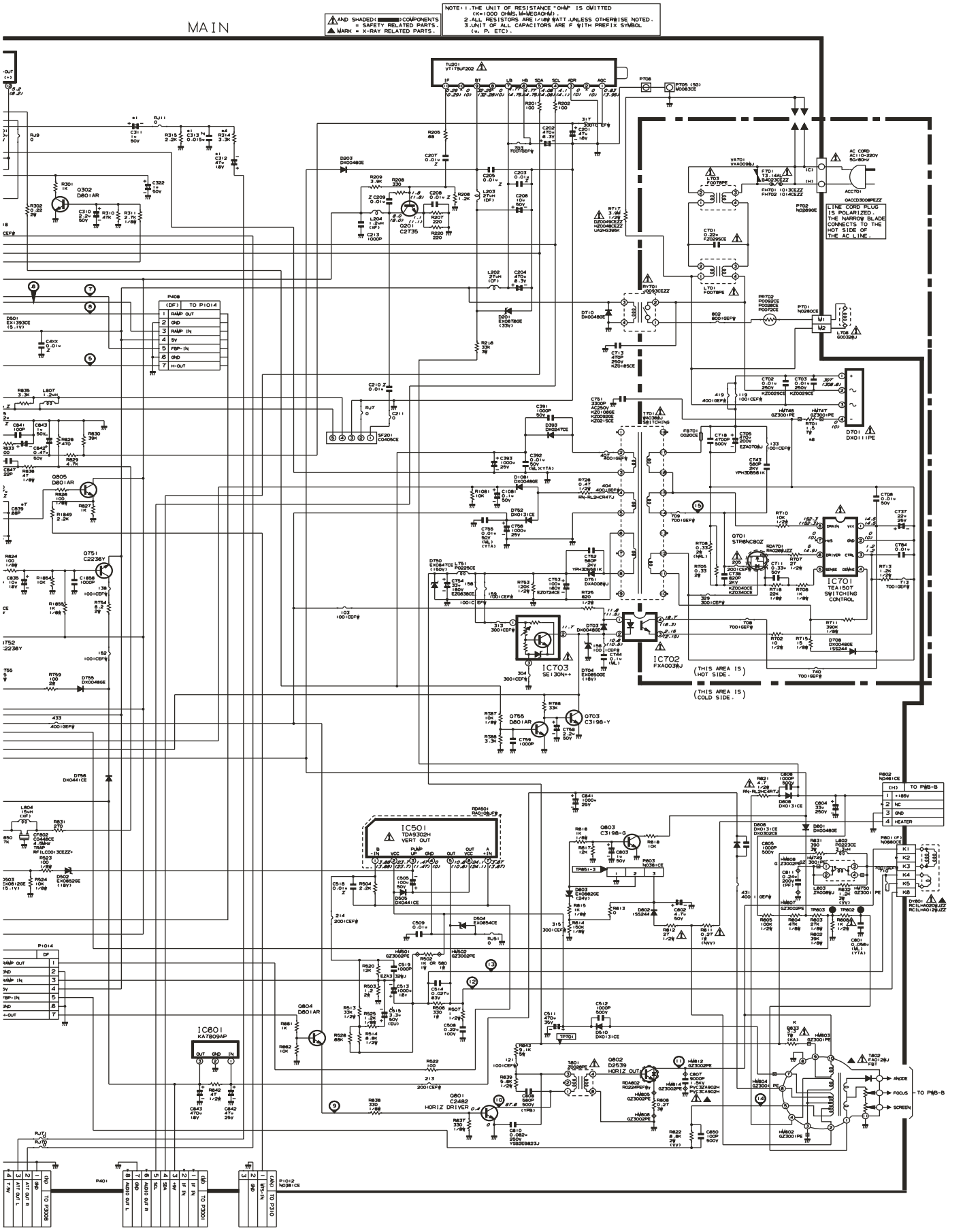
⑳ 109.6 Vp-p



Horiz.Rate

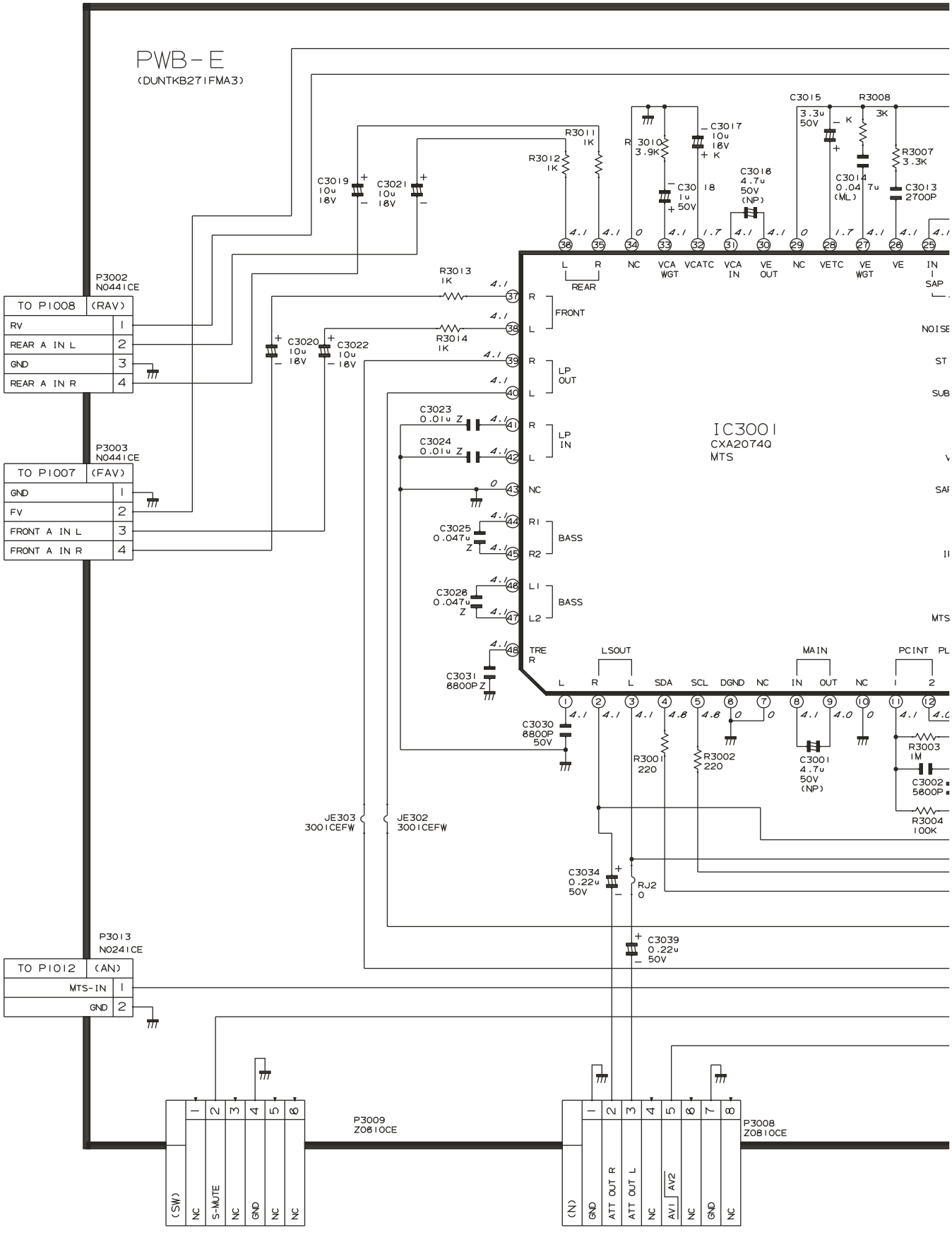
SCHEMATIC DIAGRAM: MAIN-1 Unit

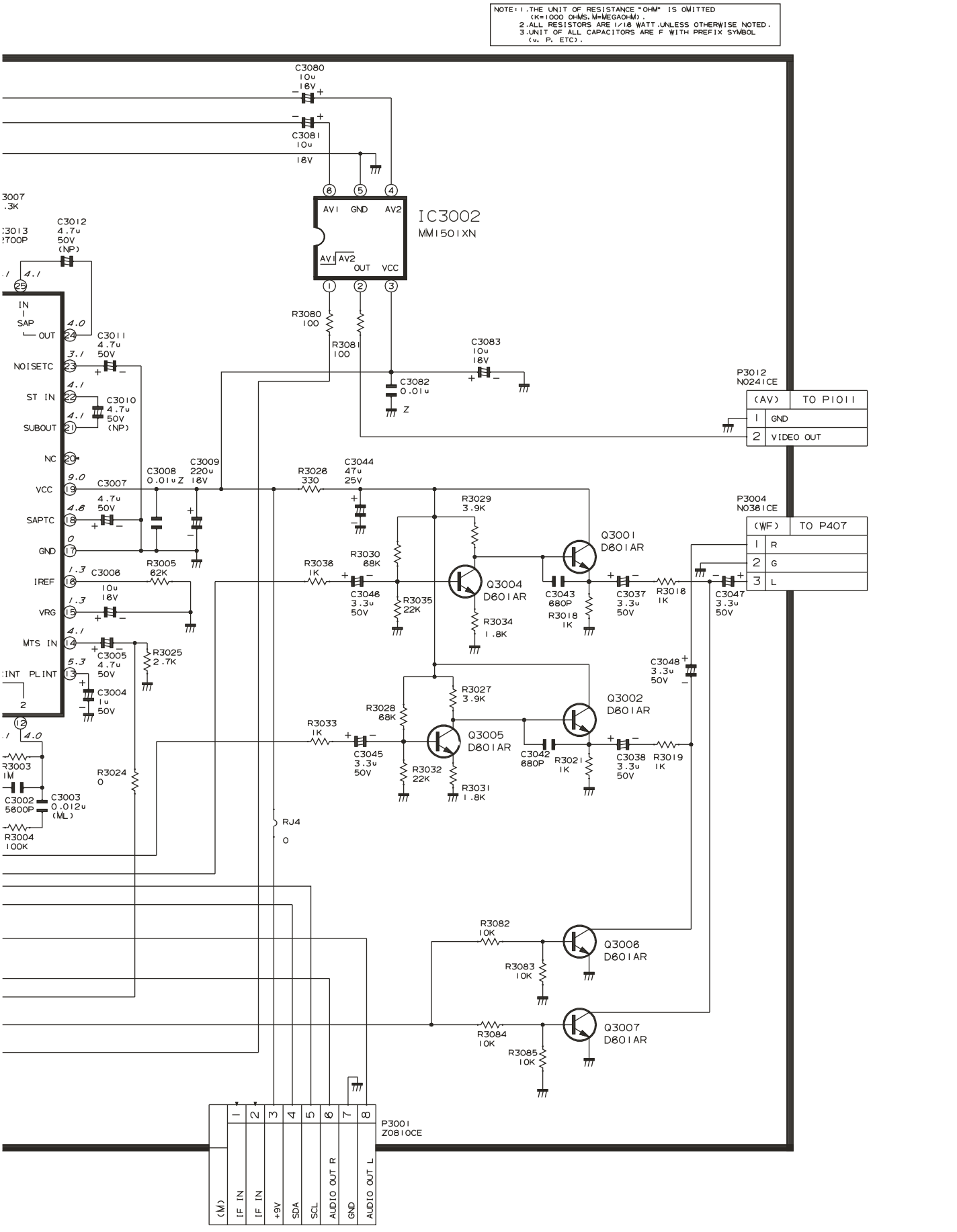




10	11	12	13	14	15	16	17	18	19

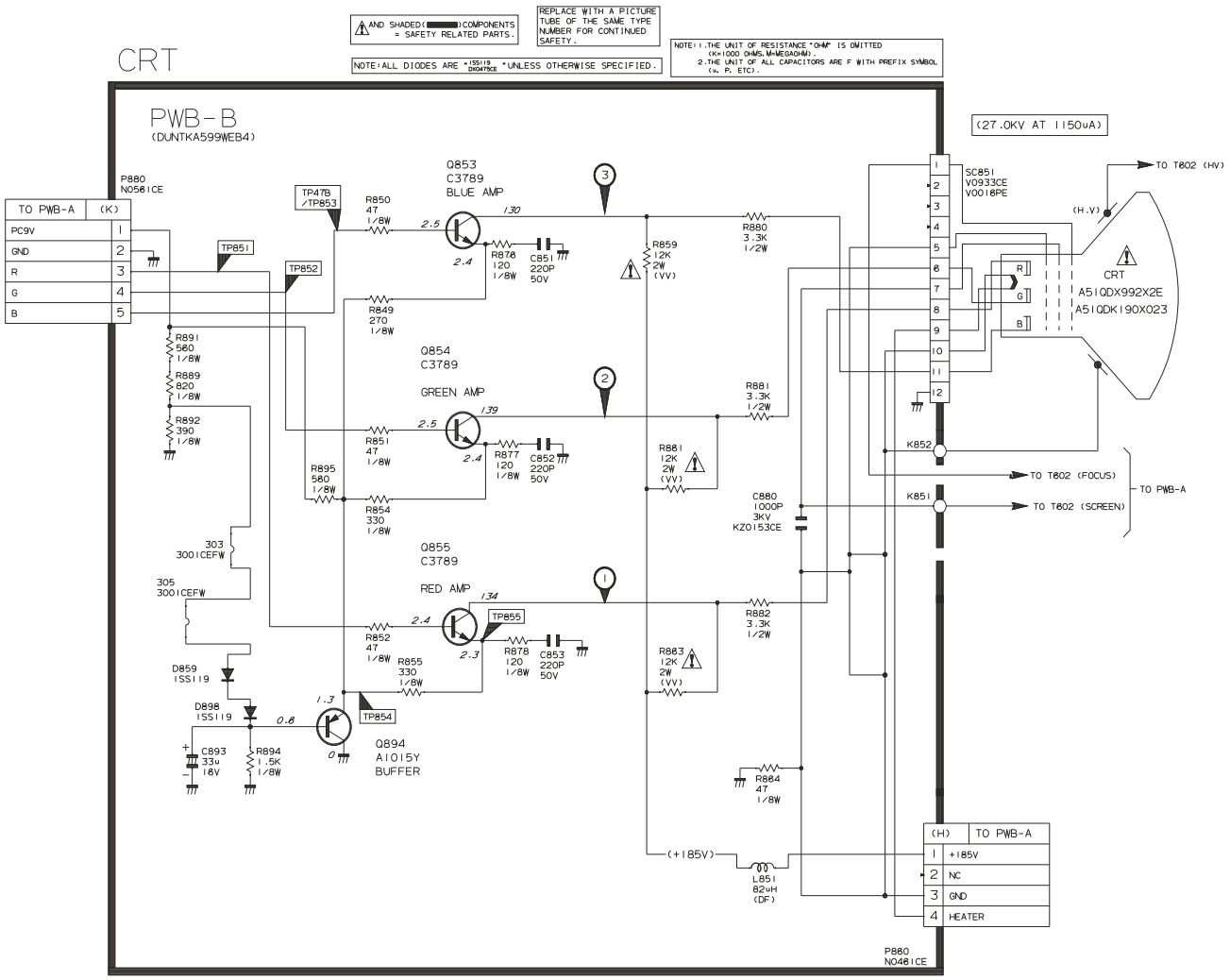
SCHEMATIC DIAGRAM: MTS MODULE



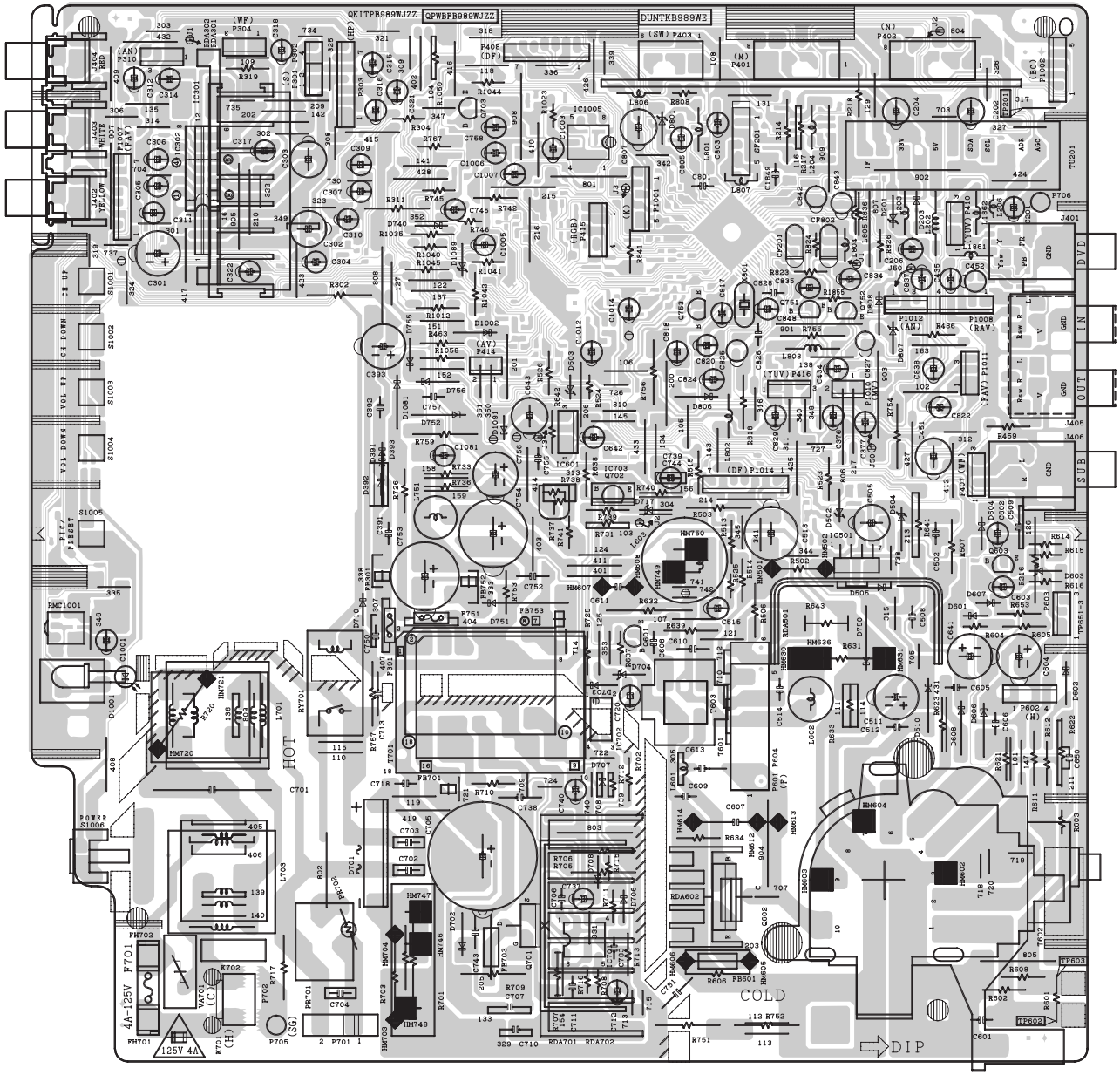


10	11	12	13	14	15	16	17	18	19

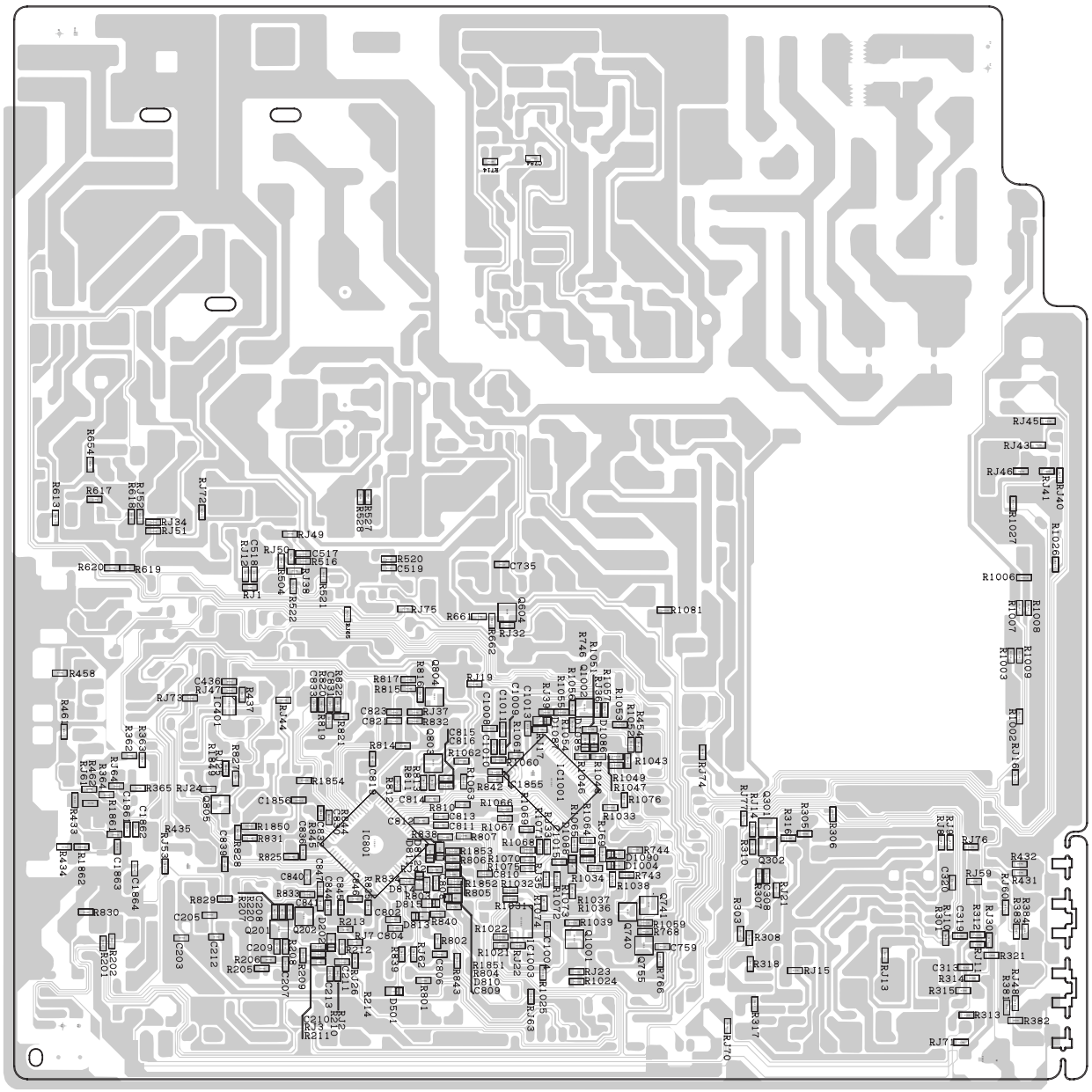
SCHEMATIC DIAGRAM: CRT Unit



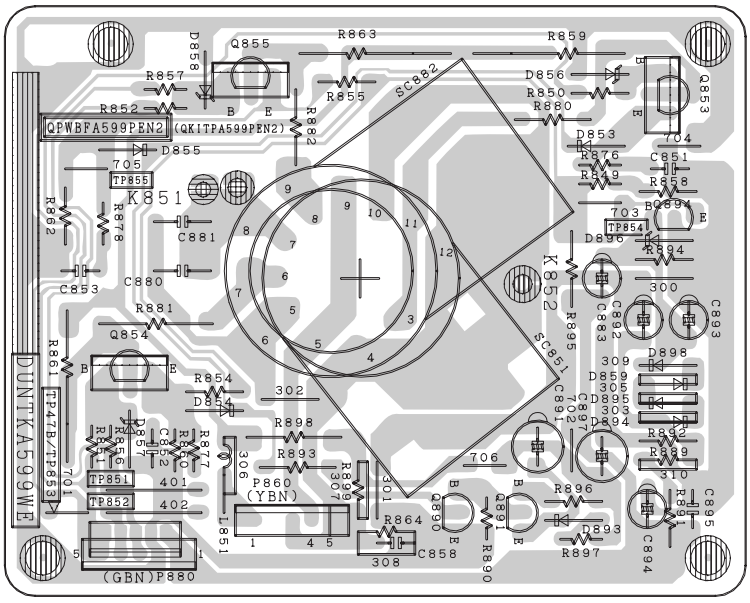
PRINTED WIRING BOARD ASSEMBLIES



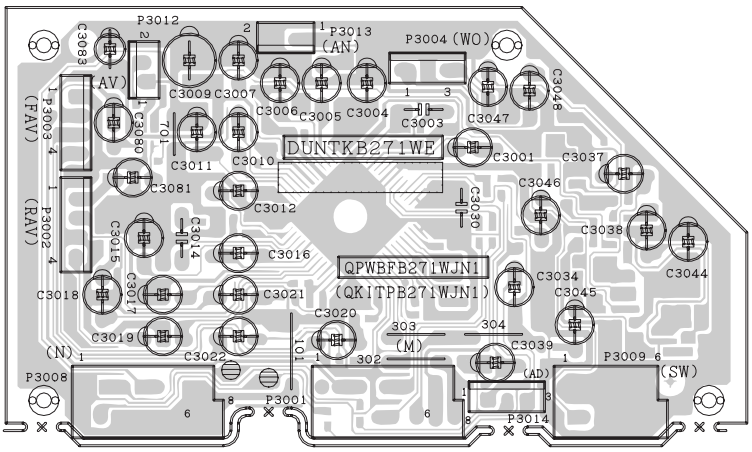
PWB-A: MAIN Unit (Wiring Side)



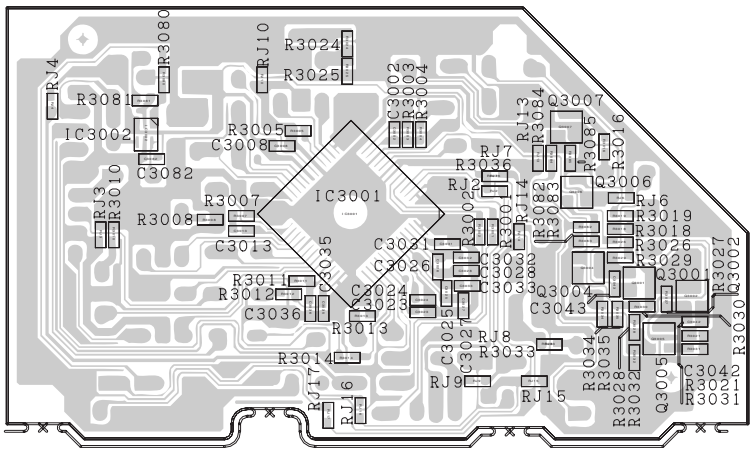
PWB-A: MAIN Unit (Chip Parts Side)



PWB-B: CRT Unit (Wiring Side)



PWB-E: MTS MODULE Unit (Wiring Side)



PWB-E: MTS MODULE Unit (Chip Parts Side)

PARTS LIST

PARTS REPLACEMENT

Replacement parts which have these special safety characteristics identified in this manual; electrical components having such features are identified by ⚠ and shaded areas in the Replacement Parts Lists and Schematic Diagrams. The use of a substitute replacement part which dose no have the same safety characteristic as the factory recommended replacement parts shown in this service manual may create shock, fire or other hazards.

"HOW TO ORDER REPLACEMENT PARTS"

To have your order filled promptly and correctly, please furnish the following informations.

1. MODEL NUMBER
2. REF. NO.
3. PART NO.
4. DESCRIPTION

in **USA**: Contact your nearest SHARP Parts Distributor to order. For location of SHARP Parts Distributor, Please call Toll-Free; 1-800-BE-SHARP

« MARK: SPARE PARTS-DELIVERY SECTION

p **MARK: X-RAY RELATED PARTS**

Ref. No.	Part No.	★	Description	Code

PICTURE TUBE

	VB51QDK190X1E	X	Picture Tube	BW
L706	RCILGA032WJZZ	X	Degaussing Coil	AK
	QEARCA012WJZZ	X	Grounding Strap	AC

PRINTED WIRING BOARD ASSEMBLIES

(NOT REPLACEMENT ITEM)

PWB-A	DUNTKB989WEA0	–	MAIN Unit	–
PWB-B	DUNTKA599WEB4	–	CRT Unit	–
PWB-E	DUNTKB271WEA3	–	MTS MODULE Unit	–

Ref. No.	Part No.	★	Description			Code

PWB-A: DUNTKB989WEA0

MAIN UNIT

TUNER

NOTE:THE PARTS HERE SHOWN ARE SUPPLIED AS AN ASSEMBLY BUT NOT INDEPENDETLY

⚠	TU201	VTUVT1T5UF202	X	Tuner		AP
		INTEGRATED CIRCUITS				
	IC301	VHIAN7522++-1	X	AN7522++		AF
	IC401	VHIMM1501XN-1Y	X	MM1501XN		AC
⚠	IC501	VHITDA9302H-1	X	TDA9302H		AE
	IC601	VHIKA7809AP-1	X	KA7809AP		AC
⚠	IC701	VHITEA1507/-1	X	TEA1507		AE
⚠	IC702	RH-FXA003WJZZ	X	PC123Y82		AB
⚠	IC703	VHISE130N++-F	X	SE130N		AD
	IC801	VHIM61251AF1EQ	X	M61251AFP		AN
	IC1001	RH-IXA155WJN4	X	IXA155WJ		AP
	IC1003	VHIBR24L16F-1Y	X	BR24L16F		AC
		TRANSISTORS				
	Q201	VS2SC2735//1EY	X	2SC2735		AB
	Q302	VS2SD601AR/-1Y	X	2SD601AR		AB
	Q601	VS2SC2482//-1+	X	2SC2482		AB
	Q602	VS2SD2539//1E	X	2SD2539		AG
	Q603	VS2SC3198-G-1+	X	2SC3198-G		AB
	Q604	VS2SD601AR/-1Y	X	2SD601AR		AB
⚠	Q701	VSSTP6NC80Z1E	X	STP6NC80Z		AF
	Q703	VS2SC3198-Y-1+	X	2SC3198-Y		AB
	Q740	VS2SD601AR/-1Y	X	2SD601AR		AB
	Q741	VS2SD601AR/-1Y	X	2SD601AR		AB
	Q751	VS2SC2236Y/-1+	X	2SC2236Y		AB
	Q752	VS2SC2236Y/-1+	X	2SC2236Y		AB
	Q753	VS2SC3198-G-1+	X	2SC3198-G		AB
	Q755	VS2SD601AR/-1Y	X	2SD601AR		AB
	Q804	VS2SB709AR/-1Y	X	2SB709AR		AB
	Q805	VS2SD601AR/-1Y	X	2SD601AR		AB
	Q1001	VS2SD601AR/-1Y	X	2SD601AR		AB
		DIODES				
	D201	RH-EX0676GEZZY	X	Zener	Diode 32V	AB
	D203	RH-DX0048GEZZY	X	DX0048GE		AB
	D393	RH-DX0247CEZZY	X	DX0247CE		AB
	D501	RH-EX1393CEZZY	X	EX1393CE		AB
	D502	RH-EX0652GEZZY	X	EX0652GE		AB
	D503	RH-EX0612GEZZY	X	EX0612GE		AB
	D504	RH-EX0654CEZZY	X	EX0654CE		AC
	D505	RH-DX0441CEZZY	X	Diode		AB
	D510	RH-DX0131CEZZY	X	Diode		AB
	D601	RH-DX0048GEZZY	X	DX0048GE		AB
	D602	VHD1SS244//-1Y	X	Diode		AB
	D603	RH-EX0662GEZZY	X	EX0662GE		AB
	D606	RH-DX0131CEZZY	X	Diode		AB
	D608	RH-DX0131CEZZY	X	Diode		AB
⚠	D701	RH-DX0111PEZZ	X	Zener	Diode	AC
	D703	RH-DX0048GEZZY	X	DX0048GE		AB
	D704	RH-EX0650GEZZY	X	Zener	Diode 16V	AB
	D708	RH-DX0048GEZZY	X	DX0048GE		AB
	D710	RH-DX0048GEZZY	X	DX0048GE		AB
	D750	RH-EX0647CEZZY	X	EX0647CE		AE
	D751	RH-DXA006WJZZ	X	Diode		AB
	D752	RH-DX0131CEZZY	X	Diode		AB
	D755	RH-DX0048GEZZY	X	DX0048GE		AB
	D756	RH-DX0441CEZZY	X	Diode		AB
	D801	RH-EX0613GEZZY	X	EX0613GE		AB
	D806	RH-DX0048GEZZY	X	DX0048GE		AB
	D807	RH-EX0625GEZZY	X	EX0625GE		AB
	D808	RH-DX0048GEZZY	X	DX0048GE		AB
	D810	RH-EX0263TAZZY	X	EX0263TA		AB
	D811	RH-EX0263TAZZY	X	EX0263TA		AB
	D812	RH-EX0263TAZZY	X	EX0263TA		AB

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MAIN UNIT (Continued)

Ref. No.	Part No.	★	Description			Code
			DIODES			
D813	RH-EX1393CEZZY	X	EX1393CE			AB
D815	RH-EX0263TAZZY	X	EX0263TA			AB
D1004	RH-EX1393CEZZY	X	EX1393CE			AB
D1081	RH-DX0048GEZZY	X	DX0048GE			AB
D1085	RH-EX1393CEZZY	X	EX1393CE			AB
D1086	RH-EX1393CEZZY	X	EX1393CE			AB
D1087	RH-EX1393CEZZY	X	EX1393CE			AB
D1088	RH-EX1393CEZZY	X	EX1393CE			AB
D1089	RH-EX0613GEZZY	X	EX0613GE			AB
D1090	RH-EX1393CEZZY	X	EX1393CE			AB
D1091	RH-DX0048GEZZY	X	DX0048GE			AB
			PACKAGED CIRCUITS			
PR702	RMPTP0092CEZZ	X	Packaged Circuit			AD
X801	RCRSAA010WJZZ	X	CRYSTAL			AB
			FILTERS			
CF201	RFILC0447CEZZ	X	FiLC0447CE			AB
CF802	RFILC0446CEZZ	X	FiLC0446CE			AB
SF201	RFILC0405CEZZ	X	Filter	(4.5MHZ)		AD
			COILS			
L202	VP-CF270K0000Y	X	Peaking,	27mH		AB
L203	VP-DF270K0000Y	X	Peaking,	27mH		AB
L204	VP-XF1R2K0000Y	X	Peaking	1.2mH		AB
L602	RCILP0223CEZZ	X	Coil,			AB
L603	RCILZA006WJZZ	X	Coil,			AD
⚠ L701	RCILF0078PEZZ	X	Coil			AC
⚠ L703	RCILF0078PEZZ	X	Coil			AC
L751	RCILP0225CEZZ	X	Coil,			AB
L801	VP-DF100K0000Y	X	Peaking,	10mH		AB
L802	VP-DF100K0000Y	X	Peaking,	10mH		AB
L803	VP-DF100K0000Y	X	Peaking,	10mH		AB
L804	VP-XF150K0000Y	X	Peaking	15mH		AB
L806	VP-DF100K0000Y	X	Peaking,	10mH		AB
L807	VP-XF1R2K0000Y	X	Peaking	1.2mH		AB
L1861	VP-XF8R2K0000Y	X	Peaking,	8.2mH		AB
L1862	VP-XF8R2K0000Y	X	Peaking,	8.2mH		AB
			TRANSFORMERS			
⚠ T601	RTRNZ0026PEZZ	X	Transformer			AD
▲ ⚠ T602	RTRNFA012WJZZ	X	H-Volt Transformer			AT
⚠ T701	RTRNWA036WJZZ	X	Transformer			AF
			CAPACITORS			
			[EL.··· Electrolytic, M-Poly.··· Metalized Polypro Film]			
C201	VCEA0A1CW476M+	X	47	16V	EL.	AB
C202	VCEA0A0JW477M+	X	470	6.3V	EL.	AB
C203	VCKYCY1HF103ZY	X	0.01	50V	Ceramic	AA
C204	VCEA0A0JW477M+	X	470	6.3V	EL.	AB
C205	VCKYCY1HF103ZY	X	0.01	50V	Ceramic	AA
C206	VCEA0A1HW106M+	X	10	50V	EL.	AB
C207	VCKYCY1HF103ZY	X	0.01	50V	Ceramic	AA
C208	VCKYCY1HF103ZY	X	0.01	50V	Ceramic	AA
C209	VCKYCY1HF103ZY	X	0.01	50V	Ceramic	AA
C210	VCKYCY1HF103ZY	X	0.01	50V	Ceramic	AA
C211	VRS-CY1JF000JY	X	00	1/16W	M-Ox.	AA
C213	VCKYCY1HB102KY	X	1000p	50V	Ceramic	AA
C301	VCEA0A1CW477M+	X	470	16V	EL.	AB
C304	VCEA0A1CW106M+	X	10	16V	EL.	AB
C307	VCEA0A1HW474M+	X	0.47	50V	EL.	AB
C308	VCKYCY1HF153ZY	X	0.015	50V	Ceramic	AA
C310	VCEA0A1HW225M+	X	2.2	50V	EL.	AB
C311	VCEA0A1HW474M+	X	0.47	50V	EL.	AB
C312	VCEA0A1HW335M+	X	3.3	50V	EL.	AB
C313	VCKYCY1HF153ZY	X	0.015	50V	Ceramic	AA
C321	VCEA0A1HW335M+	X	3.3	50V	EL.	AB
C322	VCEA0A1HW105M+	X	1	50V	EL.	AB
C377	VCEA0A1CW107M+	X	100	16V	EL.	AB
C391	VCKYPA1HB102K+	X	1000p	50V	Ceramic	AA
C392	VCQYTA1HM103J+	X	0.01	50V	Mylar	AB
C393	VCEA0A1EW108M+	X	1000	25V	EL.	AB
C434	VCEA0A1CW106M+	X	10	16V	EL.	AB
C435	VCE9GA1CW106M+	X	10	16V	EL.	AB
C436	VCKYCY1HF103ZY	X	0.01	50V	Ceramic	AA
C452	VCEA9M1CW106M+	X	10	16V	EL.	AB
C4XX	VCKYPA1HF103Z+	X	0.01	50V	Ceramic	AA
C505	VCEA0A1HW107M+	X	100	50V	EL.	AB
C508	VCFYAA2AA224J+	X	0.22	100V	M-Poly.	AB
C509	VCKYD41CY103NY	X	0.01	16V	Ceramic	AB
C511	VCEA0A1VW477M+	X	470	35V	EL.	AB
C512	VCKYPA2HB102K+	X	1000p	500V	Ceramic	AB
C513	RC-EZA332WJZZ+	X	1000	35V	EL.	AB
C514	VCFYSA1JB273J+	X	0.027	63V	M-Poly.	AB
C515	VCEACA1HC335J+	X	3.3	50V	EL.	AB
C518	VCKYCY1HF103ZY	X	0.01	50V	Ceramic	AA
C519	VCKYCY1HB102KY	X	1000p	50V	Ceramic	AA
C601	VCQYTA1HM563J+	X	0.056	50V	Mylar	AB
C602	VCEA0A1HW475M+	X	4.7	50V	EL.	AB
C603	VCEA0A1HW105M+	X	1	50V	EL.	AB
C604	VCEA0A2EW336M+	X	33	250V	EL.	AB
C605	VCKYPA2HB102K+	X	1000p	500V	Ceramic	AB
C606	VCKYPA2HB102K+	X	1000p	500V	Ceramic	AB
⚠ C607	VCFPVC3ZA902H	X	9000p	1800V	M-Poly.	AB
C608	VCKYPA2HB561K+	X	560p	500V	Ceramic	AB
C610	VCFYSB2EB823J	X	0.082	250V	M.Poly..	AB
C611	VCFPVC2DB244J	X	0.24	200V	M-Poly.	AB
C641	VCEA0A1EW108M+	X	1000	25V	EL.	AB
C642	VCEA0A1EW476M+	X	47	25V	EL.	AB
C643	VCEA0A1CW477M+	X	470	16V	EL.	AB
C650	VCKYPA2HB101K+	X	100p	500V	Ceramic	AB
⚠ C701	RC-FZ029SCEZZ	X	0.22	250V	Ceramic	AB
C702	RC-KZ0029CEZZ+	X	0.01	AC250V	Ceramic	AB
C703	RC-KZ0029CEZZ+	X	0.01	AC250V	Ceramic	AB
C705	RC-EZA070WJZZ	X	470	200V	EL.	AE
C706	VCQYTA1HM103J+	X	0.01	50V	Mylar	AB
⚠ C711	VCFYFA1HA334J+	X	0.33	50V	Mylar	AB
C713	RC-KZ016SCEZZ	X	470p	250V	Ceramic	AB
C718	VCKYPA2HB472K+	X	4700p	500V	Ceramic	AB
C737	VCEA0A1EW226M+	X	22	25V	EL.	AB
C738	RC-KZ0040CEZZ	X	820p	2kV	Ceramic	AB
C743	VCKYPH3DB561K	X	560p	2kV	Ceramic	AB
C744	VCQYTA1HM104J+	X	0.1	50V	Mylar	AB
C751	RC-KZ0106GEZZ	X	3300p	AC250V	Ceramic	AB
C752	VCKYPH3DB561K	X	560p	2kV	Ceramic	AB
C753	RC-EZ0724CEZZ	X	100	160V	EL.	AC
C754	RC-EZ0638CEZZ	X	33	160V	EL.	AC
C755	VCQYTA1HM103J+	X	0.01	50V	Mylar	AB
C756	VCEA0A1EW108M+	X	1000	25V	EL.	AB
C758	VCEA0A1HW225M+	X	2.2	50V	EL.	AB
C759	VCKYCY1HB102KY	X	1000p	50V	Ceramic	AA
C784	VCKYCY1HB103KY	X	0.01	50V	Ceramic	AA
C801	VCFYFA1HA105J+	X	1	50V	M-Poly.	AB
C802	VCKYCY1HF103ZY	X	0.01	50V	Ceramic	AA
C803	VCEA0A1AW476M+	X	47	10V	EL.	AB
C804	VCKYCY1HF103ZY	X	0.01	50V	Ceramic	AA
C805	VCEA0A1HW105M+	X	1	50V	EL.	AB
C806	VCKYCY1HF103ZY	X	0.01	50V	Ceramic	AA
C807	VCEA0A1CW337M+	X	330	16V	EL.	AB
C808	VCKYCY1HF103ZY	X	0.01	50V	Ceramic	AA
C809	VCKYCY1HF103ZY	X	0.01	50V	Ceramic	AA
C810	VCKYCY1HF103ZY	X	0.01	50V	Ceramic	AA
C811	VCKYCY1EF104ZY	X	0.1	25V	Ceramic	AA
C812	VCKYCY1EF104ZY	X	0.1	25V	Ceramic	AA
C813	VCKYCY1EF104ZY	X	0.1	25V	Ceramic	AA
C814	VCKYCY1HF103ZY	X	0.01	50V	Ceramic	AA
C815	VCKYCY1HF103ZY	X	0.01	50V	Ceramic	AA
C816	VCKYCY1EF104ZY	X	0.1	25V	Ceramic	AA
C817	VCEA0A1AW107M+	X	100	10V	EL.	AB

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MAIN UNIT

CAPACITORS

[EL.··· Electrolytic, M-Poly.··· Metalized Polypro Film]

Ref. No.	Part No.	★	Description			Code
C818	VCEA0A1HW475M+	X	4.7	50V	EL.	AB
C819	VCCCCY1HH220JY	X	22p	50V	Ceramic	AA
C820	VCEA0A1HW474M+	X	0.47	50V	EL.	AB
C821	VCKYCY1HF153ZY	X	0.015	50V	Ceramic	AA
C822	VCE9GA1HW105M+	X	1	50V	EL.	AB
C823	VCKYCY1HF103ZY	X	0.01	50V	Ceramic	AA
C824	VCEA0A1CW337M+	X	330	16V	EL.	AB
C825	VCE9EM1HW105M+	X	1	50V	EL.	AB
C826	VCKYPA1HF103Z+	X	0.01	50V	Ceramic	AA
C827	VCEA9M1CW476M+	X	47	16V	EL.	AB
C828	VCKYPA1HB103K+	X	0.01	50V	Ceramic	AB
C829	VCEA0A1CW476M+	X	47	16V	EL.	AB
C831	VCKYCY1EF104ZY	X	0.1	25V	Ceramic	AA
C833	VCKYCY1EF104ZY	X	0.1	25V	Ceramic	AA
C834	VCEA0A1CW107M+	X	100	16V	EL.	AB
C835	VCEA0A1CW106M+	X	10	16V	EL.	AB
C836	VCKYCY1HF103ZY	X	0.01	50V	Ceramic	AA
C837	VCEA0A1HW105M+	X	1	50V	EL.	AB
C839	VCCCCY1HH680JY	X	68p	50V	Ceramic	AA
C840	VCKYCY1CF474ZY	X	0.47	16V	Ceramic	AB
C841	VCCCCY1HH101JY	X	100p	50V	Ceramic	AA
C842	VCEA9M1HW474M+	X	0.47	50V	EL.	AB
C843	VCEA9M1HW105M+	X	1	50V	EL.	AB
C845	VCKYCY1CF224ZY	X	0.22	16V	Ceramic	AA
C846	VCKYCY1HF103ZY	X	0.01	50V	Ceramic	AA
C847	VCCCCY1HH220JY	X	22p	50V	Ceramic	AA
C848	VCEA0A1HW105M+	X	1	50V	EL.	AB
C1001	VCEA0A0JW107M+	X	100	6.3V	EL.	AB
C1003	VCEA0A1CW106M+	X	10	16V	EL.	AB
C1004	VCKYCY1CF474ZY	X	0.47	16V	Ceramic	AB
C1006	VCEA0A1HW225M+	X	2.2	50V	EL.	AB
C1007	VCEA0A1CW107M+	X	100	16V	EL.	AB
C1008	VCKYCY1HF103ZY	X	0.01	50V	Ceramic	AA
C1009	VCKYCY1HF103ZY	X	0.01	50V	Ceramic	AA
C1011	VCKYCY1HB221KY	X	220p	50V	Ceramic	AA
C1012	VCEA0A1HW105M+	X	1	50V	EL.	AB
C1013	VCKYCY1HB102KY	X	1000p	50V	Ceramic	AA
C1014	VCEA0A1HW475M+	X	4.7	50V	EL.	AB
C1015	VCCCCY1HH101JY	X	100p	50V	Ceramic	AA
C1081	VCEA0A1HW104M+	X	0.1	50V	EL.	AB
C1849	VCFYFA1HA223J+	X	0.022	50V	Mylar	AB
C1855	VCKYCY1HB561KY	X	560p	50V	Ceramic	AA
C1856	VCKYCY1HB102KY	X	1000p	50V	Ceramic	AA
C1861	VCCCCY1HH221JY	X	220p	50V	Ceramic	AA
C1862	VCKYCY1HB102KY	X	1000p	50V	Ceramic	AA
C1863	VCCCCY1HH221JY	X	220p	50V	Ceramic	AA
C1864	VCKYCY1HB102KY	X	1000p	50V	Ceramic	AA

RESISTORS

[M-Ox.··· Metal Oxide, M-Film ··· Metal Film]

Ref. No.	Part No.	★	Description			Code
RJ1	VRS-CY1JF000JY	X	00	1/16W	M-Ox.	AA
RJ7	VRS-CY1JF000JY	X	00	1/16W	M-Ox.	AA
RJ9	VRS-CY1JF000JY	X	00	1/16W	M-Ox.	AA
RJ11	VRS-CY1JF000JY	X	00	1/16W	M-Ox.	AA
RJ19	VRS-CY1JF000JY	X	00	1/16W	M-Ox.	AA
RJ22	VRS-CY1JF000JY	X	00	1/16W	M-Ox.	AA
RJ23	VRS-CY1JF000JY	X	00	1/16W	M-Ox.	AA
RJ33	VRS-CY1JF000JY	X	00	1/16W	M-Ox.	AA
RJ35	VRS-CY1JF000JY	X	00	1/16W	M-Ox.	AA
RJ37	VRS-CY1JF000JY	X	00	1/16W	M-Ox.	AA
RJ39	VRS-CY1JF000JY	X	00	1/16W	M-Ox.	AA
RJ41	VRS-CY1JF000JY	X	00	1/16W	M-Ox.	AA
RJ42	VRS-CY1JF000JY	X	00	1/16W	M-Ox.	AA
RJ43	VRS-CY1JF000JY	X	00	1/16W	M-Ox.	AA
RJ47	VRS-CY1JF000JY	X	00	1/16W	M-Ox.	AA
RJ50	VRS-CY1JF000JY	X	00	1/16W	M-Ox.	AA
RJ51	VRS-CY1JF000JY	X	00	1/16W	M-Ox.	AA
RJ52	VRS-CY1JF000JY	X	00	1/16W	M-Ox.	AA
RJ53	VRS-CY1JF000JY	X	00	1/16W	M-Ox.	AA
RJ60	VRS-CY1JF000JY	X	00	1/16W	M-Ox.	AA
RJ62	VRS-CY1JF000JY	X	00	1/16W	M-Ox.	AA
RJ63	VRS-CY1JF000JY	X	00	1/16W	M-Ox.	AA
RJ65	VRS-CY1JF000JY	X	00	1/16W	M-Ox.	AA
RJ69	VRS-CY1JF000JY	X	00	1/16W	M-Ox.	AA
RJ70	VRS-CY1JF000JY	X	00	1/16W	M-Ox.	AA
RJ71	VRS-CY1JF000JY	X	00	1/16W	M-Ox.	AA
RJ72	VRS-CY1JF000JY	X	00	1/16W	M-Ox.	AA
RJ75	VRS-CY1JF000JY	X	00	1/16W	M-Ox.	AA
RJ76	VRS-CY1JF000JY	X	00	1/16W	M-Ox.	AA
R201	VRS-CY1JF101JY	X	100	1/16W	M-Ox.	AA
R202	VRS-CY1JF101JY	X	100	1/16W	M-Ox.	AA
R205	VRS-CY1JF680JY	X	68	1/16W	M-Ox.	AA
R206	VRS-CY1JF122JY	X	1.2k	1/16W	M-Ox.	AA
R207	VRS-CY1JF221JY	X	220	1/16W	M-Ox.	AA
R208	VRS-CY1JF331JY	X	330	1/16W	M-Ox.	AA
R209	VRS-CY1JF392JY	X	3.9k	1/16W	M-Ox.	AA
R216	VRS-VV3LB333J	X	33k	3W	M-Ox.	AB
R220	VRS-CY1JF221JY	X	220	1/16W	M-Ox.	AA
R301	VRS-CY1JF102JY	X	1k	1/16W	M-Ox.	AA
R302	VRN-VV3DB1R2J	X	1.2	2W	M-Film	AB
R303	VRS-CY1JF103JY	X	10k	1/16W	M-Ox.	AA
R304	VRD-RA2BE683JY	X	68k	1/8W	Carbon	AA
R305	VRS-CY1JF274JY	X	270k	1/16W	M-Ox.	AA
R307	VRS-CY1JF222JY	X	2.2k	1/16W	M-Ox.	AA
R308	VRS-CY1JF392JY	X	3.9k	1/16W	M-Ox.	AA
R310	VRS-CY1JF473JY	X	47k	1/16W	M-Ox.	AA
R311	VRD-RA2BE272JY	X	2.7k	1/8W	Carbon	AA
R314	VRS-CY1JF392JY	X	3.9k	1/16W	M-Ox.	AA
R315	VRS-CY1JF222JY	X	2.2k	1/16W	M-Ox.	AA
R362	VRS-CY1JF332JY	X	3.3k	1/16W	M-Ox.	AA
R363	VRS-CY1JF564JY	X	560k	1/16W	M-Ox.	AA
R364	VRS-CY1JF332JY	X	3.3k	1/16W	M-Ox.	AA
R365	VRS-CY1JF564JY	X	560k	1/16W	M-Ox.	AA
R381	VRS-CY1JF564JY	X	560k	1/16W	M-Ox.	AA
R382	VRS-CY1JF332JY	X	3.3k	1/16W	M-Ox.	AA
R383	VRS-CY1JF564JY	X	560k	1/16W	M-Ox.	AA
R384	VRS-CY1JF332JY	X	3.3k	1/16W	M-Ox.	AA
R431	VRS-CY1JF101JY	X	100	1/16W	M-Ox.	AA
R432	VRS-CY1JF750JY	X	75	1/16W	M-Ox.	AA
R433	VRS-CY1JF750JY	X	75	1/16W	M-Ox.	AA
R434	VRS-CY1JF750JY	X	75	1/16W	M-Ox.	AA
R435	VRS-CY1JF750JY	X	75	1/16W	M-Ox.	AA
R437	VRS-CY1JF101JY	X	100	1/16W	M-Ox.	AA
R461	VRS-CY1JF750JY	X	75	1/16W	M-Ox.	AA
R462	VRS-CY1JF101JY	X	100	1/16W	M-Ox.	AA
R502	VRS-RG3AB102J+	X	1k	1W	M-Ox.	AB
R503	VRN-RL3DB1R2J+	X	1.2	2W	M-Film	AB
R504	VRS-CY1JF222JY	X	2.2k	1/16W	M-Ox.	AA
R506	VRS-RG3AB331J+	X	330	1W	M-Ox.	AB
R507	VRD-RM2HD1R0JY	X	1	1/2W	Carbon	AA
R513	VRD-RM2HD333JY	X	33k	1/2W	Carbon	AA
R514	VRD-RM2HD682JY	X	6.8k	1/2W	Carbon	AA
R520	VRS-CY1JF123JY	X	12k	1/16W	M-Ox.	AA
R522	VRS-CY1JF101JY	X	100	1/16W	M-Ox.	AA
R523	VRD-RA2BE101JY	X	100	1/8W	Carbon	AA
R524	VRD-RA2BE103JY	X	10k	1/8W	Carbon	AA
R525	VRD-RA2BE122JY	X	1.2k	1/8W	Carbon	AA
R526	VRD-RA2BE101JY	X	100	1/8W	Carbon	AA
R528	VRS-CY1JF683JY	X	68k	1/16W	M-Ox.	AA
R602	VRD-RA2BE393JY	X	39k	1/8W	Carbon	AA
R603	VRD-RA2BE273JY	X	27k	1/8W	Carbon	AA
R604	VRD-RA2BE473JY	X	47k	1/8W	Carbon	AA

PWB-A: DUNTKB989WEA0
MAIN UNIT

RESISTORS
[M-Ox.··· Metal Oxide, M-Film ··· Metal Film]

Ref. No.	Part No.	★	Description			Code
R605	VRD-RM2HD104JY	X	100k	1/2W	Carbon	AA
R606	VRN-RL3LBR27J+	X	0.27	3W	M-Film	AB
⚠ R608	VRD-RM2HD102JY	X	1.0k	1/2W	Carbon	AA
⚠ R611	VRN-RL3ABR27J+	X	0.27	1W	M-Film	AB
⚠ R612	VRD-RM2HD270JY	X	27	1/2W	Carbon	AA
R613	VRS-CY1JF000JY	X	00	1/16W	M-Ox.	AA
R614	VRD-RA2BE154JY	X	150k	1/8W	Carbon	AA
R615	VRD-RA2BE102JY	X	1k	1/8W	Carbon	AA
R616	VRD-RA2BE102JY	X	1k	1/8W	Carbon	AA
R617	VRS-CY1JF123JY	X	12k	1/16W	M-Ox.	AA
R618	VRS-CY1JF103JY	X	10k	1/16W	M-Ox.	AA
⚠ R621	VRN-RL2HC4R7J+	X	4.7	1/2W	M-Film	AB
R622	VRS-VV3DB682J	X	6.8k	2W	M-Ox.	AB
R631	VRS-KT3LB391J	X	390	3W	M-Ox.	AB
R632	VRS-RG3LB122J+	X	1.2k	3W	M-Ox.	AB
⚠ R633	VRS-KA3NG3R3K	X	3.3	7.0W	M-Ox.	AB
R637	VRD-RA2BE331JY	X	330	1/8W	Carbon	AA
R638	VRD-RA2BE331JY	X	330	1/8W	Carbon	AA
R639	VRD-RM2HD562JY	X	5.6k	1/2W	Carbon	AA
R642	VRD-RM2HD470JY	X	47	1/2W	Carbon	AA
R643	VRS-KA3HG912J	X	9.1k	5W	M-Ox.	AB
R661	VRS-CY1JF102JY	X	1k	1/16W	M-Ox.	AA
R662	VRS-CY1JF103JY	X	10k	1/16W	M-Ox.	AA
R701	VRW-KQ3NC1R5K	X	1.5	7W	Cement	AB
R702	VRD-RM2HD100JY	X	10	1/2W	Carbon	AA
R705	VRN-VV3DBR33J	X	0.33	2W	M-Film	AB
R706	VRN-VV3DBR33J	X	0.33	2W	M-Film	AB
R707	VRD-RM2HD270JY	X	27	1/2W	Carbon	AA
R708	VRD-RA2BE102JY	X	1k	1/8W	Carbon	AA
R710	VRS-RG2HC103J+	X	10k	1/2W	M-Ox.	AB
R711	VRD-RA2BE394JY	X	390k	1/8W	Carbon	AA
R713	VRD-RM2HD122JY	X	1.2k	1/2W	Carbon	AA
R715	VRD-RA2BE150JY	X	15	1/8W	Carbon	AA
R716	VRD-RA2BE223JY	X	22k	1/8W	Carbon	AA
R717	RR-DZ0049CEZZY	X	3.9M	1/2W	Solid	AB
R725	VRD-RM2HD821JY	X	820	1/2W	Carbon	AA
R726	VRN-RL2HCR47J+	X	0.47	1/2W	M-Film	AB
R742	VRD-RA2BE183JY	X	18k	1/8W	Carbon	AA
R743	VRS-CY1JF332JY	X	3.3k	1/16W	M-Ox.	AA
R744	VRS-CY1JF332JY	X	3.3k	1/16W	M-Ox.	AA
R745	VRD-RA2BE472JY	X	4.7k	1/8W	Carbon	AA
R746	VRD-RA2BE223JY	X	22k	1/8W	Carbon	AA
R753	VRD-RM2HD124JY	X	120k	1/2W	Carbon	AA
R754	VRN-RL3DB8R2J+	X	8.2	2W	M-Film	AB
R755	VRS-RG3DB150J+	X	15	2W	M-Ox.	AB
R756	VRS-RG3DB121J+	X	120	2W	M-Ox.	AB
R759	VRS-RG3DB101J+	X	100	2W	M-Ox.	AB
R766	VRS-CY1JF333JY	X	33k	1/16W	M-Ox.	AA
R767	VRD-RA2BE103JY	X	10k	1/8W	Carbon	AA
R768	VRS-CY1JF332JY	X	3.3k	1/16W	M-Ox.	AA
R802	VRS-CY1JF682JY	X	6.8k	1/16W	M-Ox.	AA
R803	VRS-CY1JF103JY	X	10k	1/16W	M-Ox.	AA
R804	VRS-CY1JF222JY	X	2.2k	1/16W	M-Ox.	AA
R805	VRS-CY1JF222JY	X	2.2k	1/16W	M-Ox.	AA
R806	VRS-CY1JF222JY	X	2.2k	1/16W	M-Ox.	AA
R807	VRS-CY1JF222JY	X	2.2k	1/16W	M-Ox.	AA
R808	VRD-RA2BE273JY	X	27k	1/8W	Carbon	AA
R810	VRS-CY1JF101JY	X	100	1/16W	M-Ox.	AA
R812	VRS-CY1JF101JY	X	100	1/16W	M-Ox.	AA
R814	VRS-CY1JF473JY	X	47k	1/16W	M-Ox.	AA
R815	VRS-CY1JF473JY	X	47k	1/16W	M-Ox.	AA
R816	VRS-CY1JF223JY	X	22k	1/16W	M-Ox.	AA
R817	VRS-CY1JF473JY	X	47k	1/16W	M-Ox.	AA
R818	VRS-RG3AB151J+	X	150	1W	M-Ox.	AB
R823	VRD-RA2BE101JY	X	100	1/8W	Carbon	AA
R824	VRD-RA2BE101JY	X	100	1/8W	Carbon	AA
R826	VRD-RA2BE101JY	X	100	1/8W	Carbon	AA
R827	VRS-CY1JF102JY	X	1k	1/16W	M-Ox.	AA
R828	VRS-CY1JF471JY	X	470	1/16W	M-Ox.	AA
R829	VRS-CY1JF472JY	X	4.7k	1/16W	M-Ox.	AA
R830	VRS-CY1JF393JY	X	39k	1/16W	M-Ox.	AA
R831	VRS-CY1JF271JY	X	270	1/16W	M-Ox.	AA
R832	VRS-CY1JF822JY	X	8.2k	1/16W	M-Ox.	AA
R833	VRS-CY1JF101JY	X	100	1/16W	M-Ox.	AA
R835	VRS-CY1JF332JY	X	3.3k	1/16W	M-Ox.	AA
R836	VRD-RA2BE470JY	X	47	1/8W	Carbon	AA
R838	VRS-CY1JF105JY	X	1M	1/16W	M-Ox.	AA
R839	VRS-CY1JF101JY	X	100	1/16W	M-Ox.	AA
R840	VRS-CY1JF124JY	X	120k	1/16W	M-Ox.	AA
R841	VRD-RA2BE821JY	X	820	1/8W	Carbon	AA
R842	VRS-CY1JF471JY	X	470	1/16W	M-Ox.	AA
R843	VRS-CY1JF103JY	X	10k	1/16W	M-Ox.	AA
R844	VRS-CY1JF185JY	X	1.8M	1/16W	M-Ox.	AA
R845	VRS-CY1JF185JY	X	1.8M	1/16W	M-Ox.	AA
R1002	VRS-CY1JF183JY	X	18k	1/16W	M-Ox.	AA
R1003	VRS-CY1JF822JY	X	8.2k	1/16W	M-Ox.	AA
R1006	VRS-CY1JF822JY	X	8.2k	1/16W	M-Ox.	AA
R1007	VRS-CY1JF103JY	X	10k	1/16W	M-Ox.	AA
R1008	VRS-CY1JF183JY	X	18k	1/16W	M-Ox.	AA
R1009	VRS-CY1JF103JY	X	10k	1/16W	M-Ox.	AA
R1021	VRS-CY1JF101JY	X	100	1/16W	M-Ox.	AA
R1022	VRS-CY1JF101JY	X	100	1/16W	M-Ox.	AA
R1023	VRD-RA2BE271JY	X	270	1/8W	Carbon	AA
R1024	VRS-CY1JF101JY	X	100	1/16W	M-Ox.	AA
R1026	VRS-CY1JF000JY	X	00	1/16W	M-Ox.	AA
R1027	VRS-CY1JF104JY	X	100k	1/16W	M-Ox.	AA
R1031	VRS-CY1JF101JY	X	100	1/16W	M-Ox.	AA
R1032	VRS-CY1JF103JY	X	10k	1/16W	M-Ox.	AA
R1034	VRS-CY1JF103JY	X	10k	1/16W	M-Ox.	AA
R1035	VRD-RA2BE101JY	X	100	1/8W	Carbon	AA
R1036	VRS-CY1JF103JY	X	10k	1/16W	M-Ox.	AA
R1037	VRS-CY1JF103JY	X	10k	1/16W	M-Ox.	AA
R1038	VRS-CY1JF562JY	X	5.6k	1/16W	M-Ox.	AA
R1039	VRS-CY1JF102JY	X	1k	1/16W	M-Ox.	AA
R1040	VRD-RA2BE273JY	X	27k	1/8W	Carbon	AA
R1041	VRD-RA2BE103JY	X	10k	1/8W	Carbon	AA
R1042	VRD-RA2BE101JY	X	100	1/8W	Carbon	AA
R1043	VRS-CY1JF104JY	X	100k	1/16W	M-Ox.	AA
R1045	VRD-RA2BE101JY	X	100	1/8W	Carbon	AA
R1046	VRS-CY1JF101JY	X	100	1/16W	M-Ox.	AA
R1047	VRS-CY1JF183JY	X	18k	1/16W	M-Ox.	AA
R1048	VRS-CY1JF101JY	X	100	1/16W	M-Ox.	AA
R1049	VRS-CY1JF183JY	X	18k	1/16W	M-Ox.	AA
R1051	VRS-CY1JF101JY	X	100	1/16W	M-Ox.	AA
R1052	VRS-CY1JF104JY	X	100k	1/16W	M-Ox.	AA
R1053	VRS-CY1JF101JY	X	100	1/16W	M-Ox.	AA
R1054	VRS-CY1JF101JY	X	100	1/16W	M-Ox.	AA
R1059	VRS-CY1JF103JY	X	10k	1/16W	M-Ox.	AA
R1061	VRS-CY1JF102JY	X	1k	1/16W	M-Ox.	AA
R1062	VRS-CY1JF105JY	X	1M	1/16W	M-Ox.	AA
R1063	VRS-CY1JF103JY	X	10k	1/16W	M-Ox.	AA
R1064	VRS-CY1JF103JY	X	10k	1/16W	M-Ox.	AA
R1065	VRS-CY1JF103JY	X	10k	1/16W	M-Ox.	AA
R1066	VRS-CY1JF561JY	X	560	1/16W	M-Ox.	AA
R1067	VRS-CY1JF152JY	X	1.5k	1/16W	M-Ox.	AA
R1068	VRS-CY1JF331JY	X	330	1/16W	M-Ox.	AA
R1069	VRS-CY1JF152JY	X	1.5k	1/16W	M-Ox.	AA
R1070	VRS-CY1JF331JY	X	330	1/16W	M-Ox.	AA
R1071	VRS-CY1JF152JY	X	1.5k	1/16W	M-Ox.	AA
R1072	VRS-CY1JF221JY	X	220	1/16W	M-Ox.	AA
R1073	VRS-CY1JF101JY	X	100	1/16W	M-Ox.	AA

Ref. No.	Part No.	★	Description			Code

PWB-A: DUNTKB989WEA0
MAIN UNIT

RESISTORS

[M-Ox.··· Metal Oxide, M-Film ··· Metal Film]

R1074	VRS-CY1JF103JY	X	10k	1/16W	M-Ox.	AA
R1075	VRS-CY1JF331JY	X	330	1/16W	M-Ox.	AA
R1076	VRS-CY1JF102JY	X	1k	1/16W	M-Ox.	AA
R1081	VRS-CY1JF103JY	X	10k	1/16W	M-Ox.	AA
R1849	VRS-CY1JF222JY	X	2.2k	1/16W	M-Ox.	AA
R1850	VRS-CY1JF472JY	X	4.7k	1/16W	M-Ox.	AA
R1851	VRS-CY1JF221JY	X	220	1/16W	M-Ox.	AA
R1852	VRS-CY1JF221JY	X	220	1/16W	M-Ox.	AA
R1853	VRS-CY1JF221JY	X	220	1/16W	M-Ox.	AA
R1854	VRS-CY1JF103JY	X	10k	1/16W	M-Ox.	AA
R1855	VRD-RA2BE102JY	X	1k	1/8W	Carbon	AA
R1861	VRS-CY1JF121JY	X	120	1/16W	M-Ox.	AA
R1862	VRS-CY1JF121JY	X	120	1/16W	M-Ox.	AA

SWITCHES

S1001	QSW-K0202PEZZ+	X	Switch,			AB
S1002	QSW-K0202PEZZ+	X	Switch,			AB
S1003	QSW-K0202PEZZ+	X	Switch,			AB
S1004	QSW-K0202PEZZ+	X	Switch,			AB
S1005	QSW-K0202PEZZ+	X	Switch,			AB
S1006	QSW-K0114CEZZ	X	Switch,			AC

FERRITE BEAD

FB701	RBLN-0020CEZZ+	X	Ferrite	Bead		AB

MISCELLANEOUS PARTS

⚠	ACC701	QACCDA015WJPZ	X	AC-Cord			AE
⚠	F701	QFS-B4023CEZZ	X	FUSE -	4A	125V	AB
	FH701	QFSHD1013CEZZ+	X	FUSE	CLIP		AB
	FH702	QFSHD1014CEZZ+	X	FUSE	CLIP		AB
	J1	VW7UGB3-240KK	X	Jumper	Cable	(240MM)	AB
	J3	VW7UGB0-090KK	X	Wire	(Black	90MM)	AA
	J50	VW7UGB7-070KK	X	Wire	(Purple	70MM)	AA
	J401	QJAKGA015WJZZ	X	Jack,	9Pin		AD
	J402	QJAKE0108CEZZ	X	Jack,	3Pin		AB
	J403	QJAKE0183CEZZ	X	Jack,	3Pin		AB
	J404	QJAKE0184CEZZ	X	Jack,	3Pin		AB
	J405	QJAKG0093CEZZ	X	Rear	AV In	Jack	AD
	J406	QJAKFA008WJZZ	X	Jack			AC
	P302	QPLGN0461CEZZA	X	Plug,	4pin	(S1-4)	AB
	P407	QPLGN0361CEZZA	X	Plug,	3pin	(TP651-3)	AB
	P601	QPLGN0660CEZZ	X	Plug,	(6 Pins)		AB
	P602	QPLGN0461CEZZA	X	Plug,	4pin	(S1-4)	AB
	P603	QPLGN0361CEZZA	X	Plug,	3pin	(TP651-3)	AB
	P701	QPLGN0260CEZZ	X	Plug,	2pin	(M1-2)	AB
	P705	QTIPM0083CEZZ	X	Tip			AB
	P1001	QPLGN0561CEZZA	X	Plug,	5Pin	(KA)	AB
	P1002	QPLGN0561CEZZ	X	Plug,	(5 Pins)		AB
	P1007	QPLGN0461CEZZA	X	Plug,	4pin	(S1-4)	AB
	P1008	QPLGN0461CEZZA	X	Plug,	4pin	(S1-4)	AB
	P1011	QPLGN0361CEZZA	X	Plug,	3pin	(TP651-3)	AB
	P1012	QPLGN0361CEZZA	X	Plug,	3pin	(TP651-3)	AB
	VA701	RH-VXA009WJZZ	X	VARISTOR			AB
	RMC1001	RRMCU0222CEZZ	X	R/C RECEIVER			AD
⚠	RY701	RRLYJ0093CEZZ	X	Relay			AD
		PRDAR0224PEFW	X	Heat	Sink	for Q602	AB
		PRDARA010WJFW	X	Heat	Sink	for IC501	AB
		PRDARA026WJFW	X	Heat	Sink	for Q701	AC

PWB-B: DUNTKA599WEB4
CRT Unit

DIODE

D859	VHD1SS119//-1Y	X	Diode	AA
D898	VHD1SS119//-1Y	X	Diode	AA

TRANSISTORS

Q853	VS2SC3789//2E	X	2SC3789	AB
Q854	VS2SC3789//2E	X	2SC3789	AB
Q855	VS2SC3789//2E	X	2SC3789	AB
Q894	VS2SA1015Y/1E+	X	2SA1015Y	AB

FILTERS

L851	VP-MK820K0000+	X	Peaking	82mH	AB

CAPACITORS

[EL.··· Electrolytic, M-Poly.··· Metalized Polypro Film]

C851	VCKYPA1HB221K+	X	220p	50V	Ceramic	AA
C852	VCKYPA1HB221K+	X	220p	50V	Ceramic	AA
C853	VCKYPA1HB221K+	X	220p	50V	Ceramic	AA
C880	RC-KZ0153CEZZ	X	1000p	3kV	Ceramic	AB
C893	VCEA0A1CW336M+	X	33	16V	EL.	AB

RESISTORS

[M-Ox.··· Metal Oxide, M-Film ··· Metal Film]

R849	VRD-RA2BE271JY	X	270	1/8W	Carbon	AA
R850	VRD-RA2BE470JY	X	47	1/8W	Carbon	AA
R851	VRD-RA2BE470JY	X	47	1/8W	Carbon	AA
R852	VRD-RA2BE470JY	X	47	1/8W	Carbon	AA
R854	VRD-RA2BE331JY	X	330	1/8W	Carbon	AA
R855	VRD-RA2BE331JY	X	330	1/8W	Carbon	AA
R859	VRS-VV3DB123J	X	12k	2W	M-Ox.	AB
R861	VRS-VV3DB123J	X	12k	2W	M-Ox.	AB
R863	VRS-VV3DB123J	X	12k	2W	M-Ox.	AB
R864	VRD-RA2BE470JY	X	47	1/8W	Carbon	AA
R876	VRD-RA2BE121JY	X	120	1/8W	Carbon	AA
R877	VRD-RA2BE121JY	X	120	1/8W	Carbon	AA
R878	VRD-RA2BE121JY	X	120	1/8W	Carbon	AA
R880	VRD-RM2HD332JY	X	3.3k	1/2W	Carbon	AA
R881	VRD-RM2HD332JY	X	3.3k	1/2W	Carbon	AA
R882	VRD-RM2HD332JY	X	3.3k	1/2W	Carbon	AA
R889	VRD-RA2BE821JY	X	820	1/8W	Carbon	AA
R891	VRD-RA2BE561JY	X	560	1/8W	Carbon	AA
R892	VRD-RA2BE391JY	X	390	1/8W	Carbon	AA
R894	VRD-RA2BE152JY	X	1.5k	1/8W	Carbon	AA
R895	VRD-RA2BE561JY	X	560	1/8W	Carbon	AA

MISCELLANEOUS PARTS

P860	QPLGN0461CEZZ	X	Plug,	4pin	(S1-4)	AB
P880	QPLGN0561CEZZ	X	Plug,	(5 Pins)		AB
SC851	QSOCV0933CEZZ	X	SOCKET (CRT)			AC

PWB-E: DUNTKB271WEA3
MTS MODULE Unit

INTEGRATED CIRCUITS

IC3001	VHICXA2074Q-1S	X	CXA2074Q_A1_	AP
IC3002	VHIMM1501XN-1Y	X	MM1501XN	AC

TRANSISTOR

Q3001	VS2SD601AR/-1Y	X	2SD601AR	AB
Q3002	VS2SD601AR/-1Y	X	2SD601AR	AB
Q3004	VS2SD601AR/-1Y	X	2SD601AR	AB
Q3005	VS2SD601AR/-1Y	X	2SD601AR	AB
Q3006	VS2SD601AR/-1Y	X	2SD601AR	AB
Q3007	VS2SD601AR/-1Y	X	2SD601AR	AB

CAPACITORS

[EL.··· Electrolytic, M-Poly.··· Metalized Polypro Film]

C3001	VCE9GA1HW475M+	X	4.7	50V	EL.	AB
C3002	VCKYCY1HB562KY	X	5600p	50V	Ceramic	AA
C3003	VCQYTA1HM123J+	X	0.012	50V	Mylar	AB
C3004	VCEA0A1HW105M+	X	1	50V	EL.	AB
C3005	VCEA0A1HW475M+	X	4.7	50V	EL.	AB
C3006	VCEA0A1CW106M+	X	10	16V	EL.	AB
C3007	VCEA0A1HW475M+	X	4.7	50V	EL.	AB
C3008	VCKYCY1HF103ZY	X	0.01	50V	Ceramic	AA
C3009	VCEA0A1CW227M+	X	220	16V	EL.	AB
C3010	VCE9GA1HW475M+	X	4.7	50V	EL.	AB
C3011	VCEA0A1HW475M+	X	4.7	50V	EL.	AB
C3012	VCE9GA1HW475M+	X	4.7	50V	EL.	AB
C3013	VCKYCY1HB272KY	X	2700p	50V	Ceramic	AA
C3014	VCQYTA1HM473J+	X	0.047	50V	Mylar	AB
C3015	VCEACA1HC335K+	X	3.3	50V	EL.	AB
C3016	VCE9GA1HW475M+	X	4.7	50V	EL.	AB
C3017	VCEACA1CC106K+	X	10	16V	EL.	AB

PWB-E: DUNTKB271WEA3
MTS MODULE Unit

CAPACITORS
[EL.··· Electrolytic, M-Poly.··· Metalized Polypro Film]

Ref. No.	Part No.	★	Description			Code
C3018	VCEA0A1HW105M+	X	1	50V	EL.	AB
C3019	VCEA0A1CW106M+	X	10	16V	EL.	AB
C3020	VCEA0A1CW106M+	X	10	16V	EL.	AB
C3021	VCEA0A1CW106M+	X	10	16V	EL.	AB
C3022	VCEA0A1CW106M+	X	10	16V	EL.	AB
C3023	VCKYCY1HF103ZY	X	0.01	50V	Ceramic	AA
C3024	VCKYCY1HF103ZY	X	0.01	50V	Ceramic	AA
C3025	VCKYCY1HF473ZY	X	0.047	50V	Ceramic	AB
C3026	VCKYCY1HF473ZY	X	0.047	50V	Ceramic	AB
C3030	VCQYTA1HM682J+	X	6800P	50V	Mylar	AB
C3031	VCKYCY1HF682ZY	X	6800p	50V	Ceramic	AA
C3034	VCEA0A1HW224M+	X	0.22	50V	EL.	AB
C3037	VCEA0A1HW335M+	X	3.3	50V	EL.	AB
C3038	VCEA0A1HW335M+	X	3.3	50V	EL.	AB
C3039	VCEA0A1HW224M+	X	0.22	50V	EL.	AB
C3042	VCKYCY1HB681KY	X	680p	50V	Ceramic	AA
C3043	VCKYCY1HB681KY	X	680p	50V	Ceramic	AA
C3044	VCEA0A1EW476M+	X	47	25V	EL.	AB
C3045	VCEA0A1HW335M+	X	3.3	50V	EL.	AB
C3046	VCEA0A1HW335M+	X	3.3	50V	EL.	AB
C3047	VCEA0A1HW335M+	X	3.3	50V	EL.	AB
C3048	VCEA0A1HW335M+	X	3.3	50V	EL.	AB
C3080	VCEA0A1CW106M+	X	10	16V	EL.	AB
C3081	VCEA0A1CW106M+	X	10	16V	EL.	AB
C3082	VCKYCY1HF103ZY	X	0.01	50V	Ceramic	AA
C3083	VCEAKA1CW106M+	X	10	16V	EL.	AB

RESISTORS
[M-Ox.··· Metal Oxide, M-Film ··· Metal Film]

Ref. No.	Part No.	★	Description			Code
RJ2	VRS-CY1JF000JY	X	00	1/16W	M-Ox.	AA
RJ3	VRS-CY1JF000JY	X	00	1/16W	M-Ox.	AA
RJ4	VRS-CY1JF000JY	X	00	1/16W	M-Ox.	AA
RJ10	VRS-CY1JF000JY	X	00	1/16W	M-Ox.	AA
RJ13	VRS-CY1JF000JY	X	00	1/16W	M-Ox.	AA
RJ14	VRS-CY1JF000JY	X	00	1/16W	M-Ox.	AA
RJ15	VRS-CY1JF000JY	X	00	1/16W	M-Ox.	AA
RJ16	VRS-CY1JF000JY	X	00	1/16W	M-Ox.	AA
RJ17	VRS-CY1JF000JY	X	00	1/16W	M-Ox.	AA
R3001	VRS-CY1JF221JY	X	220	1/16W	M-Ox.	AA
R3002	VRS-CY1JF221JY	X	220	1/16W	M-Ox.	AA
R3003	VRS-CY1JF105JY	X	1M	1/16W	M-Ox.	AA
R3004	VRS-CY1JF104JY	X	100k	1/16W	M-Ox.	AA
R3005	VRS-CY1JF623JY	X	62k	1/16W	M-Ox.	AA
R3007	VRS-CY1JF332JY	X	3.3k	1/16W	M-Ox.	AA
R3008	VRS-CY1JF302JY	X	3k	1/16W	M-Ox.	AA
R3010	VRS-CY1JF392JY	X	3.9k	1/16W	M-Ox.	AA
R3011	VRS-CY1JF102JY	X	1k	1/16W	M-Ox.	AA
R3012	VRS-CY1JF102JY	X	1k	1/16W	M-Ox.	AA
R3013	VRS-CY1JF102JY	X	1k	1/16W	M-Ox.	AA
R3014	VRS-CY1JF102JY	X	1k	1/16W	M-Ox.	AA
R3016	VRS-CY1JF102JY	X	1k	1/16W	M-Ox.	AA
R3018	VRS-CY1JF102JY	X	1k	1/16W	M-Ox.	AA
R3019	VRS-CY1JF102JY	X	1k	1/16W	M-Ox.	AA
R3021	VRS-CY1JF102JY	X	1k	1/16W	M-Ox.	AA
R3024	VRS-CY1JF000JY	X	00	1/16W	M-Ox.	AA
R3025	VRS-CY1JF272JY	X	2.7k	1/16W	M-Ox.	AA
R3026	VRS-CY1JF331JY	X	330	1/16W	M-Ox.	AA
R3027	VRS-CY1JF392JY	X	3.9k	1/16W	M-Ox.	AA
R3028	VRS-CY1JF683JY	X	68k	1/16W	M-Ox.	AA
R3029	VRS-CY1JF392JY	X	3.9k	1/16W	M-Ox.	AA
R3030	VRS-CY1JF683JY	X	68k	1/16W	M-Ox.	AA
R3031	VRS-CY1JF182JY	X	1.8k	1/16W	M-Ox.	AA
R3032	VRS-CY1JF223JY	X	22k	1/16W	M-Ox.	AA
R3033	VRS-CY1JF102JY	X	1k	1/16W	M-Ox.	AA
R3034	VRS-CY1JF182JY	X	1.8k	1/16W	M-Ox.	AA
R3035	VRS-CY1JF223JY	X	22k	1/16W	M-Ox.	AA
R3036	VRS-CY1JF102JY	X	1k	1/16W	M-Ox.	AA
R3080	VRS-CY1JF101JY	X	100	1/16W	M-Ox.	AA
R3081	VRS-CY1JF101JY	X	100	1/16W	M-Ox.	AA
R3082	VRS-CY1JF103JY	X	10k	1/16W	M-Ox.	AA
R3083	VRS-CY1JF103JY	X	10k	1/16W	M-Ox.	AA
R3084	VRS-CY1JF103JY	X	10k	1/16W	M-Ox.	AA
R3085	VRS-CY1JF103JY	X	10k	1/16W	M-Ox.	AA

MISCELLANEOUS PARTS

Ref. No.	Part No.	★	Description			Code
P3001	QPLGZ0810CEZZ	X	Plug,	32"		AB
P3002	QPLGN0441CEZZ	X	Plug,	4Pin	(RAV)	AB
P3003	QPLGN0441CEZZ	X	Plug,	4Pin	(RAV)	AB
P3004	QPLGN0361CEZZ	X	Plug,	3Pin	(WF)	AB
P3008	QPLGZ0810CEZZ	X	Plug,	32"		AB
P3009	QPLGZ0610CEZZ	X	Plug,	6Pin		AB
P3012	QPLGN0241CEZZ	X	Plug,	(2 Pins)		AB
P3013	QPLGN0241CEZZ	X	Plug,	(2 Pins)		AB

MISCELLANEOUS PARTS

SP301	VSP1205PB09WA	X	SPEAKER (L)	AK
SP302	VSP1205PB09WA	X	SPEAKER (R)	AK
	LHLDK0014PEZZ	X	AC CORD HOLDER	AB
	LHLDW0102GJKZ	X	WIRE TIE (20.32 CM)	AB
	LHLDW1033PEZZ	X	WIRE TIE (10.4 CM)	AA
	LHLDZ0063PEZZ	X	Holder (Insulator Ring)	AB
	QCNW-A299WJZZ	X	WIRE FOR MTS	
	QCNW-A482WJZZ	X	WIRE (DY) 21FL	
	QCNW-A529WJZZ	X	WIRE (YUV) MAIN	
	QCNW-A530WJN1	X	WIRE (AN) MTS	
	QCNW-A531WJN1	X	WIRE (FAV) MTS	
	QCNW-A532WJN1	X	WIRE (RAV) MTS	
	QCNW-A534WJN1	X	WIRE (MTS)	
	QCNW-A625WJZZ	X	WIRE (THUNDER)	
	QCNW-A871WJZZ	X	WIRE (H) 5 PIN	
	QCNW-A872WJZZ	X	WIRE (K) 4 PIN	
	QCNW-A873WJZZ	X	WIRE (SPEAKER)	

SUPPLIED ACCESSORIES

Ref. No.	Part No.	★	Description	Code
			ACCESSORIES	
	RRMCGA108WJSA	X	Infrared R-C Unit	AT
	TGAN-A216WJN1	X	WARRANTY CARD	AB
	TINS-B177WJZZ	X	OPERATION MANUAL	AD
	TCAUH3045GJZZ	X	CAUTION CARD	AB

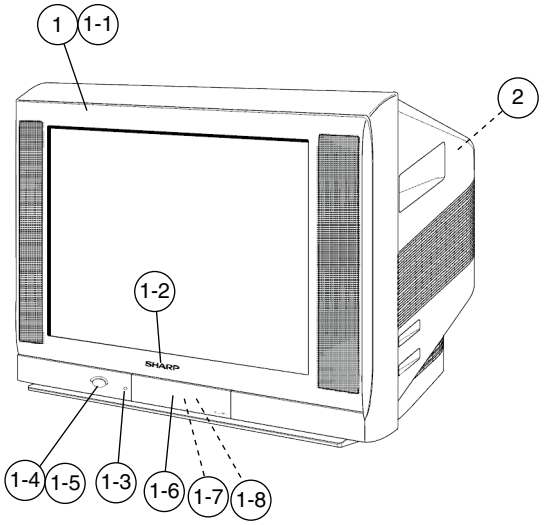
CABINET PARTS

Ref. No.	Part No.	★	Description	Code
1	CCABAA323WEH7	X	Front Cabinet Ass'y	—
1-1		—	Front Cabinet	—
1-2	HBDGB3155CESA	X	SHARP Badge	AD
1-3	HDECQA119WJSA	X	LED/RC Cover	AC
1-4	JBTN-A070WJKD	X	Power Button	—
1-5	MSPRC0005PEFW	X	Power Button Spring	AA
1-6	GDORFA015WJKD	X	door	—
1-7	MSPRPA012WJFW	X	Door Spring	AB
1-8	HINDPA194WJSA	X	Indication Plate	AC
2	GCABBA088WJKA		Rear Cabinet	AX

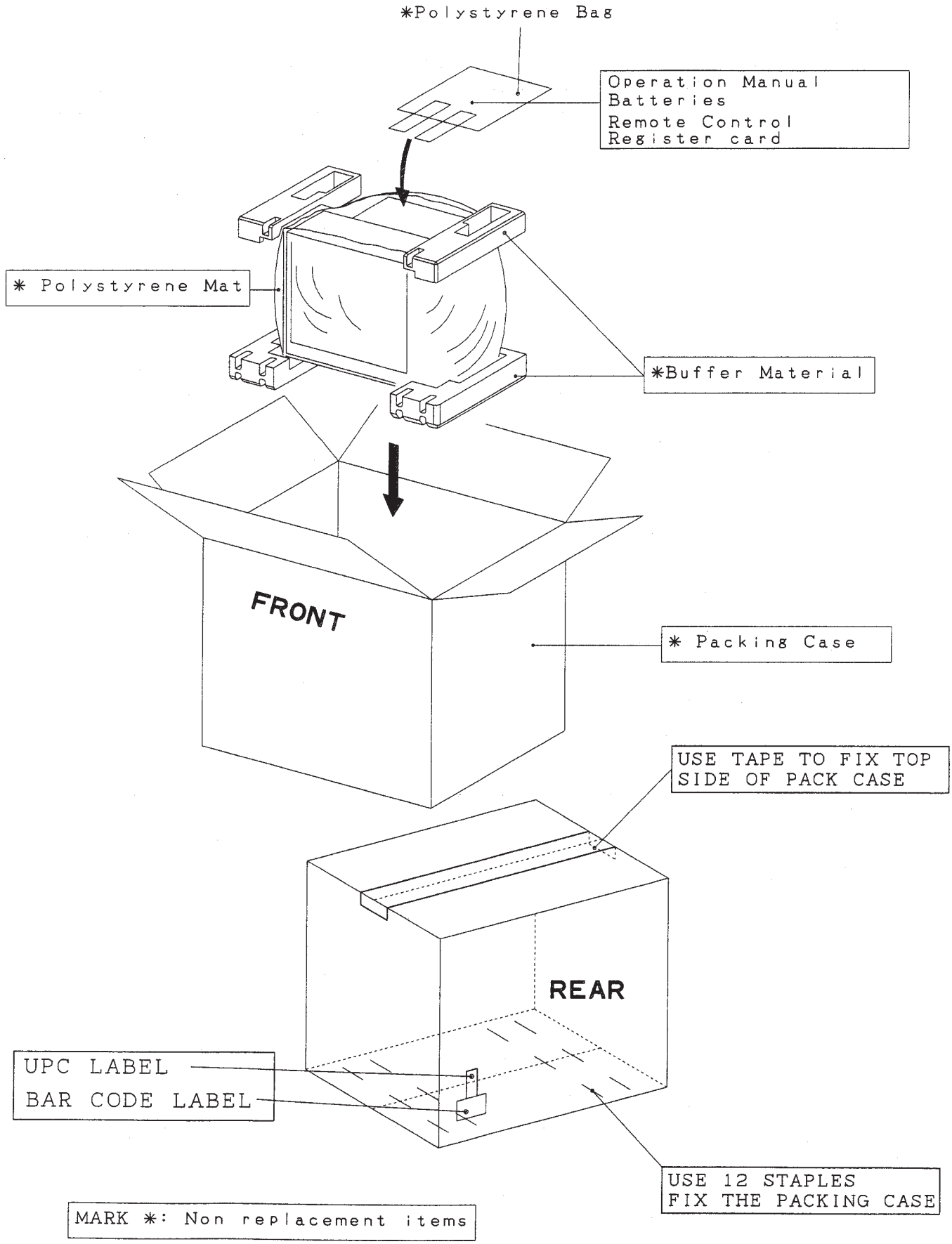
PACKING PARTS
NOT REPLACEMENT ITEM)

Ref. No.	Part No.	★	Description	Code
	SPAKCB250WJZZ	X	PACKING CASE	AR
	SPAKPA125WJZZ	X	LAMIN FOAM	AF
	SPAKXA145WJZZ	X	PACKING FOAM	AK
	SSAKA0101GJZZ	X	PLASTIC BAG	AB

CABINET PARTS LOCATION



PACKING OF THE SET



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QRC0017-U
March. 2004
Modify : SEMEX

Design and Production Information
Design : SEM
Production : SEMEX

J B

SHARP ELECTRONICA MEXICO S. A. DE C. V.
Quality & Reliability Control Center
Blvd. SHARP No. 3510 Parque Industrial Rosarito
Playas de Rosarito, México B. C. 22710

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